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Advantages of a Vacuum System

By "'Ust a Dub"

There have been in the last decade a number of vacuum systems of different types and characters in the market and a great many heating contractors have been pushing the sale of the different systems, each one of his particular system with little regard to whether or not the system which he is pushing is the one best adapted to the condition which exists in the building to be heated. The consequence of this has been that every type of vacuum-system has been installed in different classes of buildings and the owner has been induced by the salesman to buy the system and pay out his money for having it installed, believing that the reduction of his operating costs would be sufficient to pay the extra expense of installation within one or two years. This may, or may not, be the case; but if it is not, there is no way of proving it; so the result is apt to be that Mr. Owner will go right along happy in the belief that he has the most economical heating system in the world.

It is also a fact that in many cases the contractor and salesman who are directly responsible for the installation are about as much in the dark as to the real facts in the case as the owner himself.

It is the object of this article to discuss one class of vacuum-systems by comparing the operation of the vacuum with that of the steam-job under the varying conditions.

Let us consider, for example, a small residence requiring, say, 500 sq. ft. of direct steam-radiation divided into 10 radiators and using a boiler having a rated capacity of 800 sq. ft. This boiler has a grate area of 4.28 sq. ft. and a total heating surface of 43.7 sq. ft., a steam space of 3.07 cu. ft. and a water space of 4.31 cu. ft. Thus, since a cubic foot of water weighs 62.2 lb., we find that the boiler holds 62.2 × 4.31 or 276 lb. of water. Now the measurement of heat used by American engineers is the B.t.u., which, as stated many times in different articles in "Domestic Engineering" is the quantity of heat necessary to raise one pound of water one degree in temperature.

Thus, if we have 267 lb. of water in the boiler, there will be required 267 B.t.u. for each degree difference in temperature through which the water is raised.

Let us assume, for convenience, that each pound of soft coal used in this boiler contains 14,000 B.t.u. and that the boiler operates with an efficiency of 50 per cent; thus, for every pound of coal burned there will be 7,000 B.t.u. absorbed by the boiler. Also let us assume that when the firing begins the water in the boiler is at a temperature of 70 deg. F. Then, to raise this entire mass of 267 lb. of water to a boiling temperature, or 212 deg. F., requires (212 — 70) 267 = 37,647 B.t.u., which represents the consumption of 37,647 ÷ 7,000 = 5.4 lb. of coal. That is, this much coal must be burned before any heat is carried to the radiators.

We will now suppose that the plant is operated during the day at atmospheric pressure and that the rooms are heated to 70 deg. F. Now let us study what would happen should the fire be removed suddenly. Of course the radiation goes right along condensing, although there is no more heat being supplied. In an ordinary one-pipe steam-job, the steam which is already in the system condenses very quickly and air rushes in through the air valves to fill the vacant space; the radiators are cooled very quickly and no more heat is felt in the rooms.

Now at the time the fire is drawn, the water in the boiler is at the same temperature as when steam began to be generated; thus it contains the 37,647 B.t.u., the heat which it has gained at the expense of 5.4 lb. of coal. What becomes of this heat? If the boiler is fired up immediately it is not lost, but is retained in the water and the steam begins to be generated as soon as the firing begins.

If the system is allowed to stand several hours without firing, this heat must be radiated through the boiler-wall into the basement, the water in the boiler cools down and no benefit is gained from it, and our 5.4 lb. of coal has been a complete loss.

Now let us study what happens in a vacuum system under the same condition; the operation is exactly the same up to the time of drawing the fire. The system is filled with steam at atmospheric pressure when the fire is suddenly drawn, and, as in the other case, the radiation goes right along condensing though no heat is being supplied, and, as the air cannot get back into the system through the air-valves, there begins immediately a tendency to form a vacuum in the system. This relieves the atmospheric pressure from the water in the boiler, and as water in a vacuum boils at a much lower temperature, we can clearly see that the radiators will still be filled with steam, even though the fire is out and the temperature of the water in the boiler is below 212 deg., which is the boiling point at atmospheric pressure.

As one man explained it, "This vacuum in the radiators keeps drawing the heat and vapor from this hot water in the boiler."

Rather a homely way of expressing it, but nevertheless true and easily understood.

Now where does this heat come from and what does

it amount to? It is the 37,647 B.t.u. which we got by burning the 5.4 lb. of coal at the beginning; and assuming that each square foot of radiation gives off 250 B.t.u. per hour, it is enough to keep one square foot of radiation at a constant temperature of 212 deg. for 37,647 ÷ 250 or 150 hours. Or to keep the whole 500 sq. ft. at that temperature, 1/500 of 150, or 18 minutes.

Of course these figures show only the actual amount of heat saved in an ideal case, and does not show what happens in ordinary firing.

Let us go farther and suppose that, in each of the above cases, the second firing takes place as soon as the radiation is cold. In the first case the water in the boiler is at a temperature of 212 deg. F. (neglecting what has radiated from the boiler-wall) so steam is generated immediately when firing begins; because since no heat has been lost either through the boiler-wall or the radiation during the time the fire was out the water still retains its 37,647 B.t.u. mentioned above and is at a temperature of 212 deg. F.

In the second case, the vacuum-appliance has removed this 37,647 B.t.u and has used it to keep the radiation heated for 18 minutes, as mentioned above; therefore the water in the boiler contains no heat and is again at a temperature of 70 deg.

So in the first case steam begins to be generated immediately at the second firing, while in the second case, which is the vacuum system, the water must again be heated to the boiling point by the consuming of 5.4 lb. of coal before any steam is generated.

Now let us consider a case in which the intervals between firing are very long, say 24 hours. In this case the one-pipe steam-job will cease to be effective as soon as the fire goes out and the 37,647 B.t.u. will remain in the boiler water only to be radiated by the boiler-wall during the interval, the occupant obtaining no benefit whatever from it. In the second case, however, the vacuum apparatus will lift this heat into the radiation supplying heat enough to keep it warmed to a temperature of 212 deg. for 18 minutes after the fire is out and the occupant of the room gets so much benefit from it.

In short, we may say that the value of such a system is that, when firing ceases, the heat of the liquid is delivered to the rooms, while in the case of the ordinary steam-job it will be radiated through the boiler-wall during the interval between fires.

I think this will do for this time. I will discuss some other types next time. If there are any questions so far, I shall be pleased to answer such as I am able in the next installment.

Best System of Radiation for Economy in Steam Consumption When Operated in Connection With Central Station Service*

By W. J. Kline, North Tonawanda, N. Y.

A member of this association has asked for information as to the best system of radiation for economy in steam consumption when operated in connection with central-station service. This is a debatable question, since there are many systems from which to choose, each possessing some merit, and in some instances certain ones are given preference.

I shall not attempt in this paper to give a detailed description of the various systems, patented and otherwise, which are in use at the present time, but will endeavor to present a few fundamental principles in the piping of buildings which result in the highest operating efficiency, together with a general view of the relation of the customer's installation to the central plant.

Primarily, artificial heating may be classified as direct or indirect, the piping arrangements being divided into two general divisions, known as the "one-pipe" and the "two-pipe" systems. Both the one and two-pipe systems are variously modified and known by various names, especially the latter.

In the operation of a central-station heating system, it is of very great importance that all buildings which are connected to the underground system should have properly designed piping, no matter what system is employed; and further, the installation should be so designed that a pressure of one pound above atmosphere at the point of entrance of the service-main to the building will be sufficient to circulate steam throughout the system in maximum conditions of demand and produce the desired result. It is important that every installation be designed to operate under low pressure, as the exterior, or street system, may then be operated at its lowest average pressure. This, in turn, results in the highest degree of operating economy, by reason of being able to supply a maximum amount of radiation through the existing mains, reducing transmission losses as well as reducing the back-pressure in case of combination plants, which becomes an item of special importance in all plants where the output of exhaust steam available is in excess of the heating demand. It is true there is an economical limit in pipe sizes beyond which it is not advisable to go to secure low operating pressure on the underground system, but in a large majority of cases 5 lb. initial pressure should not be exceeded.

In connection with central-station steam-heating, it may be laid down as a principle that any system of steam piping may be operated by a central-station service, and that better results will be attained than by the operating of individual boiler installations. It does not necessarily follow that the desired low-pressure operation will be possible unless changes in existing piping are made in some instances, but where piping is properly designed in the original installation there will be no question of a satisfactory service being supplied to the customers.

Some of the systems of piping buildings possess inherent advantages over others, due to the fulfillment of certain conditions which are necessary for economical operation. The one great essential for economical operation with an

*Read before the third annual meeting of the National District Heating Association, held at Pittsburgh, Pa., June 6-8, 1911.

individual installation, or with a central-station heating service, is **regulation.** If we concede the low pressure operation of the underground heating system, then there still remains the problem of internal or individual regulation of heat used in buildings, and this is a vital one whether the heat is sold by flat-rate or by meter. In the one instance the company is the principal gainer, and in the second instance the consumer. To facilitate regulation, much apparatus has been designed and many schemes devised for the automatic regulation of the temperature in buildings heated by various methods. These devices have taken the form of thermostatic control, which is a primary element, with vacuum-pumps, drip-seals, regulating-valves of various kinds, etc. The ultimate success of these devices, and of many systems of piping for that matter, depends largely on the personal equation, and in addition are subject more or less to mechanical failure. For instance, in a building the heating of which is controlled by automatic temperature-regulators, under favorable conditions the supply of heat is regulated to a nicety, but if ventilation other than that from natural causes is desired, and windows and doors opened, causing an unusual circulation of air and consequent lowering of temperature, the thermostat automatically opens the valves, causing the inflow of steam with a consequent waste of heat, and the purpose of the thermostat is thus defeated. In all interior systems the minimum of waste occurs with the lowest operating pressure. Therefore, the best system is one which will operate satisfactorily on ounces of pressure instead of pounds. The system described hereafter operates on a normal pressure of five ounces and a maximum of eight.

Since the human element and the ability to regulate accurately enters so largely into the question of operating economy, the system which in itself is simple in form, and requires but little manipulation to secure highest thermal efficiency of the steam supplied, is the one the writer would recommend as a specific and best form of house piping. The individual, to enjoy the utilization of the greatest quantity of heat-units delivered to him in the form of steam, must be able to use all the heat-units supplied to the radiators in the particular room or rooms which he desires to heat and to be able to control it in such manner that there shall be no waste. In order best to accomplish this result, it is necessary at certain times to utilize only a very small percentage of the radiating surface, depending of course on the weather conditions. In the ordinary type of steam-piping, the admission of steam to the radiator is at the bottom through ordinary radiators of the angle type. This method of supplying steam results in heating the entire surface of the radiator, thus allowing the radiation of a much greater number of heat-units than necessary. Due to inconvenience of adjusting valves on radiators of this type when once turned on, when personal discomfort results the quick cooling of the room is obtained by opening doors and windows, with attendant waste.

It has been found that a very satisfactory regulation and economy can be obtained by using the hot-water type of radiation, which has an open passage across the top as well as the bottom, and making the supply or inlet-connection at the top instead of at the bottom of the radiator, as in the ordinary systems. Regulating the supply of steam is accomplished by means of a valve which can be operated without the discomfort of stooping to open or close valves near the floor. With this arrangement a very small quantity of steam only may be admitted as desired, and consequently only that portion of the radiating surface necessary for comfort is heated, the remaining surface of the radiator acting as an economizer in removing the sensible heat remaining in the condensation. On account of the steam being admitted to the top of the radiator, the installation becomes essentially a two-pipe system. Steam being admitted at the top of the radiator, the air is naturally forced out at the bottom through the return-piping, which necessitates bringing all of the return-pipes to a common point, and then "venting" by means of connecting the returns to a "live" chimney-flue.

For convenience in the circulation and control of the amount of steam required, a graduated valve has been devised to assist the operator to regulate the supply of heat. These valves are calibrated for the amount of heating surface to be supplied under a maximum pressure of 8 oz. The opening provided in the valve is so proportioned that only 85 per cent of the surface of the radiator will be heated when the valve is fully opened at times of maximum demand. The remaining portion of the radiator cools the condensation as it trickles down the interior walls, and thus the sensible heat in the condensation is reclaimed. Heating systems of this kind properly designed and installed may be operated so that the temperature of the condensation in the returns is only slightly above the temperature of the room, thereby making it unnecessary to cover the returns. This represents an efficiency which it is possible to obtain in ordinary practice, and there are instances of installation of this atmospheric system, so-called, where the temperature of the outflowing condensation was practically the temperature of the room in which the radiation was located. A system of this type may be operated with from 20 to 35 per cent better economy than it is possible to obtain by any other system under parallel conditions.

The essential features of the atmospheric system are:

1st. External low pressure of operation without resorting to mechanical means to produce circulation.

2d. Ease of regulation of an accessible graduated or fractional valve, designed for the particular radiator on which it is installed.

3d. The absolute elimination of noise by bringing the steam into the top of the radiator, allowing the condensation to flow by gravity from the bottom of the radiator, thus eliminating opposing currents of steam and water.

4th. The absolute distribution and control of the heat when and where required by the operator.

5th. The elimination of air-vents and possible odors.

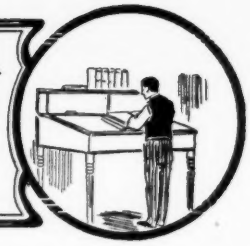
Thus, you will see that the atmospheric system described fulfills the essential features of satisfactory operation, both to the operating company and to the consumer, in its simplicity of design, economy of installation, ease and economy of operation. The first cost is no greater than the ordinary type of installation, and much less than some of the patented systems. Simplicity of regulation is also attained and the consumer receives the greatest amount of benefit for the heat for which he is to pay.

While flat-rates are never at any time considered advisable, companies operating by this method of charging will find this system of advantage, as the method of distributing the steam reduces the possibility of waste. It will always be found, however, that the amount of steam consumed by a flat-rate customer will be much greater than where meters are in use, no matter what method of piping is employed.

The system, as briefly described, is known as the "Atmospheric System of Steam-Heating," and has been evolved after years of experience with various kinds of house piping in connection with central-station service.

BUSINESS MANAGEMENT

NEW METHODS FOR OLD



"THE SQUIRE" ANSWERS "THE OFFICE BOY."

Editor "Domestic Engineering":—"The Office Boy" requests me to answer several questions, and I shall proceed to do so to the best of my ability. I do know it to be a positive fact that goods purchased in car lots are billed on the 2 per cent basis. I have heard that some of the jobbers take notes in payment of 10 per cent goods, but, as they have never done so for me, I cannot positively say that they will do so for any one else. You know, it is a fact that the grand jury may indict a man, but that it is sometimes pretty hard to make the indictment stick. I sincerely believe that the 10 per cent plan has put a whole lot of the fellows who are called un-businesslike in their proper niches, and I do not believe that there are as many of them in the business today in proportion to the population of the city and the amount of work being done as there were five years ago. Furthermore, the fact that a man is a little fellow is no proof that he has a small bank account, neither is the fact that a concern is doing oceans of business proof that they have barrels of money. Consider the failure of three big concerns in this city within the past year.

As I have no means of knowing the amount of capital which my competitors possess, it is mighty hard for me to tell whether or not the fellows who are starting with a little capital are justified in doing just as big a business as the so-called big fellows who are supposed to have good husky bank accounts. It is also my honest opinion that the majority of the so-called big fellows were, previous to the installation of the 10 per cent basis, doing business on the jobbers' money, and they were big fellows solely because they were expert in the gentle art of staving off the collector.

I do know that the jobbers take owners' garantees for heating material, but I cannot swear that they will do the same on plumbing material, and I think it wrong of them to do it.

I do not know that any of the jobbers are selling material direct to the consumer at the present time, and I am of the opinion that there is only one jobber who holds that it is right to sell to the journeymen and who has in the past done so and may be doing so today, but I do not think that he is.

I remain unconvinced that either of the present 2 per cent houses can hold better than fourth or fifth place in the amount of business transacted either in the city of Minneapolis itself or in amount of city and country sales handled through the local warehouses. Of these two concerns, one of them in a stand - patter from January first to December thirty-first, but the less said about trade protection on the part of the other one the better for all concerned. However, a complete case:—A certain journeyman plumber, holding a political position, has been making a little extra money by installing plumbing goods for his neighbors after his regular day's work or on Sundays and holidays, and he had been purchasing his material from one of the 10 per cent houses. The manager of this particular 10 per cent house was advised as to the manner in which his wares were being handled, and he immediately stopped selling material to this particular plumber, with the immediate result that he looked for a new base of supplies and found it. It was the 2 per cent jobber.

As to voting on the proposition, it is a fact that this has been the subject of some debate in the meetings of the masters, but those in favor of returning to the 2 per cent plan are few and far between. The real live-up-to-the-minute master plumbers do not give a tinker's dam as to whether the discount is 2 per cent or 10 per cent, 20 per cent, or any other per cent; they have got the money to pay for what they buy, they were discounting their bills under the old 2 per cent regime, and they will continue to do so as long as they are in business. I sometimes feel that it would be to the best interests of the master plumbers if the jobbers were to withhold the 10 per cent discount until the end of the year and then give it to them in a bunch. The shock might be fatal to some of them, but they would be assured of a fine and dandy funeral and a mite for the widow, and those that would survive would have a little profit where they could feel it and look at it.

It is only about a year ago that the largest jobber in this city sent out letters requesting the trade to reply as to whether or not they favored the continuance of the 10 per cent plan or a return to the 2 per cent plan, and I have been informed that he only received one letter favoring a return to the old plan. Had the plumbers wanted the old plan they could have had it for the asking, and it is my opinion that if they want it now they can get it by asking for it.

Plumbing conditions in the city of Minneapolis are peculiar, but even at that, I think that with one or two exceptions they are as good here as they are anywhere in the country. One drawback to an ideal condition is the fact that we have too many supply houses, with the natural result that the old supply houses have a certain number of customers from whom they get a good volume of business; the new supply houses open up, and to get business they must create, as it were, a certain number of shops to dispose of their wares, and it is this competition which is injurious.

It would be a fine thing for the masters of this city if the leading jobbers could absorb three or four of the small fry; and it would be a good thing for the jobbers if the masters would confine their purchases to the local jobbers instead of loading up with an assortment of wares from the East as numerous as were the colors in Joseph's coat. There is nothing to be made by purchasing material out of town, unless a person has a very "waiting" disposition (by this, I mean, waiting an uncertain time for the goods to arrive, waiting about 90 days or more to pay for them, and then waiting for a chance to use them because you got too many of this and too few of that).

I would also offer this as a reason why the jobber would be tempted to break the rules. Suppose that the jobber has a good customer, one who confines his purchases almost entirely to this one supply house, one who has a reputation for paying for what he gets, who is not a perpetual whiner and kicker, one who does not listen to the honey-coated salve from the peddler from out-of-town,

and let us assume that this good customer, this master plumber, is held up on some big job, finds it impossible for him to get his money in time to meet his obligations on the 15th of the month, and, accordingly, he asks for an extension of time and gives a note as an evidence of good faith. The jobber discounts the note at the bank and gets the use of the money all right, and, in due course of time, the note is taken up. Now, I say, that the jobber who would not carry one of his good customers in such a case would be an ingrate of the deepest black, and would not deserve the patronage of a decent man; but if the master plumber were one of those chaps who shops a little here and a little there, who wants the jobber to deliver a 20x30 flat rim sink within an hour to Fifty-ninth street and Forty-ninth avenue South, who buys everything he can out of town, and who is continually finding errors and overcharges (?) in his invoices, then I would not blame the jobber for putting on the clamps and holding this particular breed of a master plumber to the strictest interpretation of the selling rules possible to make.

We master plumbers are prone to blame the jobber for all of the faults of the business, but, for the life of me, I cannot see but that it is up to the master plumber. It is the master plumber who is the purchasing power, and if he will get together with his fellow competitors for trade protection, not only of plumbing material, but of heating material as well, will stand by the local jobber, will insist on the jobber delivering his wares to the master plumber's place of business instead of direct to the job, and will also sell his wares as does any other merchant (omitting the installation string and the gambling chance) we will not have to worry about the discount nor its manner of application.

There seems also to be considerable stress laid upon the fact that there are so many plumbing establishments now in operation, and, on the face of it, it seems true, for there is this man and that man and the Lord only knows who now running shops, but 'at the same time there is hardly a year but what some master plumber dies, retires, moves away or engages in some other calling. An examination of the records shows, however, that in the year 1904 there were 112 master plumbers' licenses issued, and thus far in 1911 there have been 127 issued, and for no year between those two have the number issued exceeded 125. The growth of the city in the meantime has been phenomenal, as has also the increase in the amount of heating and plumbing apparatus installed, and, accordingly, I do not think that the addition of 15 shops, less than two shops per year, is worthy of any serious consideration.

In conclusion, the mere fact that some of us are "old timers" in the plumbing and heating business, is not sufficient reason why we should have a monopoly on the business; and if some few of us have been the favored of the gods and are possessed of some wealth, we cannot necessarily assume that the other fellow may not have a bundle of cash simply because he is starting in a small way. We were all small fry at one time, and it will take something a whole lot stronger than what "they say" to convince me that the jobbers have not chosen wisely on the discount proposition. "The Squire."

Minneapolis, Minn.

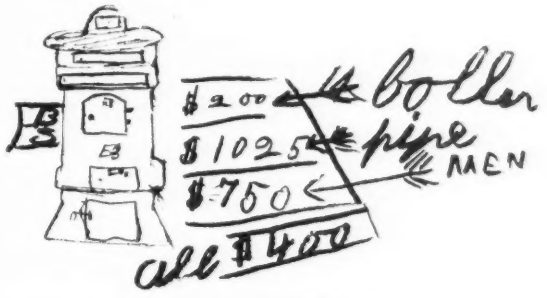
That Eternal Question.

Willie—"Pa!"
Pa—"Yes."
Willie—"Teacher says we're here to help others."
Pa—"Of course we are."
Willie—"Well, what are the others here for?"—Chicago News.

A SIX-YEAR-OLD'S ESTIMATE.

Editor "Domestic Engineering":—Herewith I hand you estimate made by a six-year-old, which nearly equals many we hear of in business.

Your cartoons are very interesting, but I believe as long as children have inclinations toward such totals as



A Six-Year-Old's Estimate.

shown, you should have "Domestic Engineering" adopted among text-books by school-boards.

St. Paul, Minn. D. W. Stevens.

WISCONSIN NEWS.

Superior, Wis.—A. Dauplaise has been awarded the contract for the construction of the Hammond Memorial fountain in the Hammond Memorial Park. The fountain will be 30 ft. long and 12 ft. wide. A jet of water will spring from the center and on each end of the basin will be ornamental drinking-fountains. The memorial is to Gen. John H. Hammond, founder of the main section of Superior.

Kewaunee, Wis.—The Kewaunee Heating Co. will install a steam-heating plant in the saloon and flat building of Thos. Hlinak on Ellis street.

Milwaukee, Wis.—Sealed bids will be received in the office of the Board of School Directors until 5 p. m., November 2, for furnishing material and doing the plumbing work required in the east and west wings and boiler-house of the Milwaukee School of Trades for Boys, between Greenbush, Virginia, Hanover streets and College place. Frank M. Harbach is secretary.

Milwaukee, Wis.—Contracts will soon be awarded for plumbing and heating in several buildings in Milwaukee, which are to be constructed soon or are under construction now. John Humholz is having an eight-apartment building erected on 26th and Wells streets. It will have all the modern improvements. Leenhouts & Guthrie, architects, 102 Wisconsin street, have prepared plans for a bungalow for W. Krueger, to be erected at Muskego Lakes. Plumbing and hot water heating contracts for this will soon be let. F. W. Andree, architect, 77 Cawker building, has drawn plans for C. Engelke, who is having a house erected at 49th and Vine streets.

Olivia, Minn.—McIlraith & Sykes is the name of a plumbing firm which has just opened an up-to-date establishment here.

Louisville, Ky.—F. S. Schardein & Sons, 129 South Sixth St., have been awarded the contract for the installation of a vacuum steam-heating system and an up-to-date plumbing system in the Galt House in this city. The contract amounts to $15,000. The plumbing system calls for 72 lavatories.

Ramona, S. Dak.—James B. Nagle has recently opened a shop in the Muller building and will do all kinds of plumbing, heating and tinning.

Aurora, Nebr.—Mossholder & Fletcher is the name of a new firm which has succeeded Chas. Robeck in the plumbing business. Both members of the firm have had years of experience in Lincoln.

Sheridan, Wyo.—Theodore A. Harker, who until recently conducted a successful plumbing business at Livingston, Mont., has moved to this city and opened an up-to-date plumbing establishment at 523 N. Main street.

LEGAL DECISIONS

CONSTRUCTION OF CONTRACT FOR PLUMBING.

A plumber contracted in writing with a general contractor for a building, to provide all the materials and do all the work of "plumbing, gas-piping and ice-water plant piping" in the building, as set forth and explained in certain drawings and specifications prepared by the architects. The contract provided that in case any particular should be deficient or not clearly expressed in said specifications and drawings, the plumber should apply to the general contractor for additional drawings and explanations, and should carry out the general design, as directed by such contractor, in a thorough manner as part of the contract. Also, that it should be lawful for the general contractor at all times to direct in writing any additions to or deviations from the drawings and specifications aforesaid, without in any other respect or particular varying this agreement or impairing the force thereof; and in case of any such addition or deviation so directed in writing, such further time should be allowed for the completion of said work as the architect should decide to be reasonable, and such sums of money should be added to or subtracted from the amount of the consideration agreed to be paid, as the increase or diminution in the amount of work and materials thereby occasioned should be fairly worth. And near the end of the contract was the general provision that "the general contractor will pay for no extra work or material unless ordered in writing."

The Supreme Judicial Court of Massachusetts says, Johnson vs. Norcross Bros. Co., 95 Northeastern Reporter, 833, that the purpose of the provision that the general contractor should not be held to pay anything either for changes, additions or other extra work unless ordered in writing was plain. The provision manifestly was intended to prevent any future controversy likely to arise as to the liability of the general contractor for work so done, and it was a useful and reasonable provision.

Evidence offered to show a general custom known to the parties was rightly rejected. The natural meaning of the language of the contract was that the written order to do the work was to be given before the work began, and that only such an order was intended. If that was the meaning of the contract, then the evidence was properly rejected as inconsistent with its express language. If it should be urged that in reliance upon this custom the plumber went ahead without the written order, expecting to get that at some time afterward, the answer would be that he did so at his peril. To say that because he did so he therefore should recover without the written order, the general contractor not having waived the provision or been guilty of fraud, would be to annul the provision for the order. If there was such a custom as the plumber offered to show, then the provision of the contract read in the light of that custom would be interpreted to mean that for changes and alterations and extras there was to be no pay unless some time before the work was fully done, or after its completion, a written order was given, but it would not show that the written order was not to be given at all. Moreover, it would be immaterial when it was not shown that any verbal order was given by the general contractor or by any one for whom it was responsible.

A ruling asked for by the plaintiff was properly refused which would have held the general contractor to pay for work though he did not order the work or in any way agree to pay for it. Another ruling requested was also properly refused which involved the assumption, contrary to fact, that the specifications gave a line for a main drain. Even if such a line had been given and afterwards was varied by the architects to an unreasonable extent, the general contractor, having nothing to do with it, would not be chargeable with the cost. The parties had expressly agreed that the changes which the architect could order should be those which would not increase the cost.

A VERBAL CONTRACT FOR PLUMBING WAIVING RIGHT TO LIEN.

In an action brought by plaintiffs to recover a claim and foreclose a mechanic's lien for plumbing and installing a heating plant in the residence of the defendants under a verbal contract, the Supreme Court of Washington says, Ward vs. Thorndyke, 117 Pacific Reporter, 593, that it should have been found that the original agreement was that on completion of the work the defendant should pay $200 cash, and that his unsecured 90-day note for the balance would be accepted; that this contract was never modified except to allow certain extras; that a sufficient tender of the $200 and of the 90-day note was made about the time of the completion of the work; that in making the tender the defendant offered to include in the note both of the items for extras, neither of which was then disputed; that no lien was contemplated by either party; and that both of them then understood that the $200 and an unsecured 90-day note should be received as payment.

It was contended that the taking of a note would not waive the lien unless so specified in the note, and the court thinks that this is a correct construction of the Washington statute which provides that "The taking of a promissory note or other evidence of indebtedness for any labor performed or material furnished for which lien is created by law shall not discharge the lien therefor, unless expressly received as payment and so specified therein." But in this case the evidence justified the inference that the original agreement was that the $200 and the note should be received in payment for the work, which would imply a waiver of the lien, and the defendant would have had the right so to specify in the note. He offered to give a note in performance of his contract. The plaintiffs refused to look at it. The court is justified in assuming that it conformed to the contract. It thinks the trial court was warranted in holding that the tender of payment was according to the contract and precluded a lien. No formal tender of the note was necessary, since the plaintiffs' testimony showed that any such tender would have been idle.

However, the trial court erred in not allowing interest on all of the debt, except the $200 which was tendered. As to that sum, the tender when due prevented the recovery of interest. The note for the balance, which would have included both extras, had it been accepted, would, of course, have borne interest from the completion of the work, and the judgment should have included this.

Bargains.

"Gracious, what is all that crepe for?"

"I had a chance to get it at a bargain, and, you know, my husband goes in for flying!"—London Opinion.

The Boss Talks to His New Foreman About Heating

Written by T. Twice

VII.

There are a number of ways of providing for expansion. Fig. 18 shows an expansion-joint commonly used in straight lines of pipe-work, and is about the best thing to use where it is possible to do so. The center of the joint is packed with a special packing which prevents the escape of steam or water, but allows the piece marked

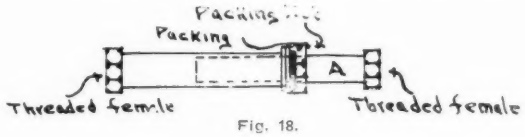


Fig. 18.

"A" to slide in and out of the other piece, thus allowing for the expansion and contraction in the pipe-line. Various combinations of pipe and fittings are used to allow for expansion, but you must be careful that you do not

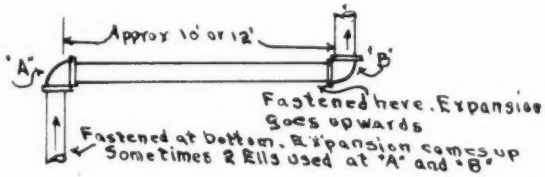

Approx 10' or 12'
'A'
'B'
Fastened here. Expansion goes upwards
Fastened at bottom. Expansion comes up
Sometimes 2 Ells used at 'A' and 'B'

Fig. 19.

make pockets for the condensation to collect in. Sometimes in eight or 10-story buildings, or higher, the piping is carried across from one side of the room to the other,

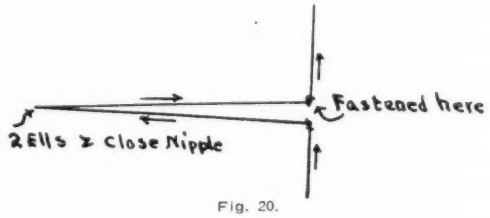


Fig. 20.

between the floors, or in a space provided for it, as shown in Fig. 19, and then extended on up, thus providing for expansion. Sometimes the piping is carried 8 or 10 ft.

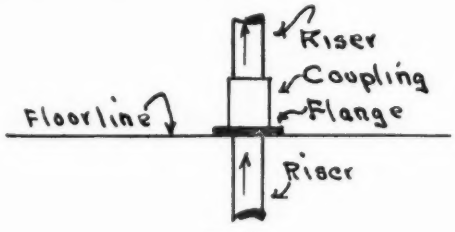


Fig. 21.

out from the riser in a space provided for it, and then brought back again and carried up, as shown in Fig. 20. This method is sometimes spoken of as a "scissors" expansion-joint. About as good a method as you can use for providing for the expansion in the risers in an 8 or 10-story building, is shown in Fig. 21, which should be placed at the fourth or fifth floor. The riser will be securely supported by this method, and the expansion can be up or down from this point. You will find that you cannot improve much on this method.

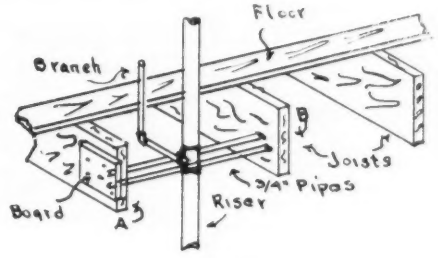


Fig. 22.

Fig. 22 shows a simple method of supporting risers for small buildings, say not over three or four stories in height. Fig. 23, 24, 25 and 26 show methods of supporting risers in steel construction buildings. Fig. 23 allows for expansion either up or down from the support. The others hardly need any description. We will discuss other types of hangers later on, John.

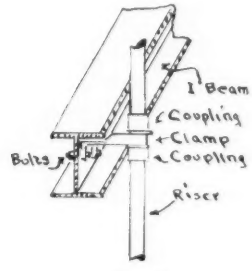


Fig. 23.

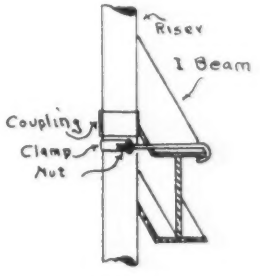


Fig. 24.

Figs. 27 and 28 show an indirect radiator you will have to put in the Smith store job, near the front door. You will be surprised what a difference this will make in the heating of the store. You will notice by the arrows, that the cold air coming in from under the door, or when the door is opened, makes a straight shoot for the cold-air

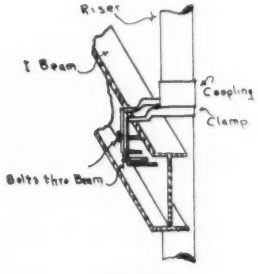


Fig. 25.

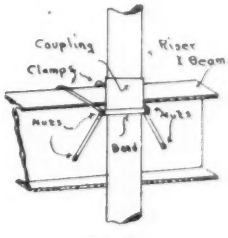


Fig. 26.

register, instead of spreading over the floor of the room. The registers can be taken out in the summer-time, and iron plates put in their place, if desired. You will notice there are clean-out caps placed in the galvanized work directly under each register. These will allow for the easy removal of anything that may be dropped or swept

into the registers. Always have these clean-out caps placed in your indirect work, John, and do not place your indirects directly under the registers, as it is hard to remove the rubbish that drops between the indirect sec-

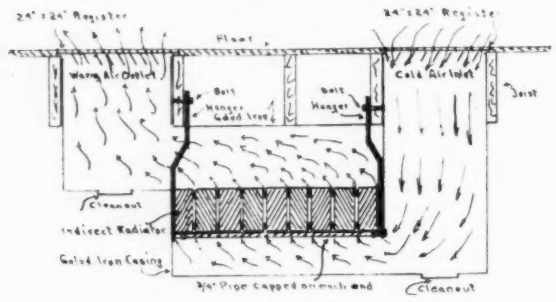


Fig. 27.

tions. Your piping will be in the regular manner for indirect work.

In central-station work, John, this indirect scheme is often used to cool the condensation to a safe temperature

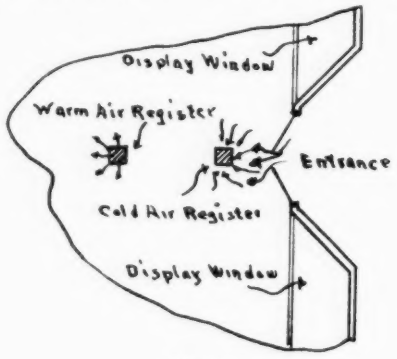


Fig. 28.

for discharging into the soil-pipe or sewer. We will take up district heating later on. I believe we may as well close up for the night.

(To be continued.)

PUBLIC-COMFORT STATION MOVEMENT DISCUSSED BY NEW YORK STATE PLUMBERS' EXECUTIVE COMMITTEE.

The executive committee of the New York State Association of Master Plumbers held a meeting at the Rockwell House, Glens Falls, N. Y., on Wednesday, October 18th, for the transaction of business which has arisen since the last state convention held at Rochester, March 7th and 8th.

A full representation of the committee was present, consisting of President John H. Moran, of Albany; Vice-President Frank B. Lasette, of New York; Recording and Financial Secretary James H. Doody, of Albany; Treasurer Charles A. Campbell, of Watertown; National State Vice-President B. J. O'Donnell, of Syracuse; Frederick E. Fladd, of Rochester; John R. Sheehan, of Schenectady; Thomas E. O'Brien, of Brooklyn; Frank L. Beyer, of Buffalo; George L. Brucker and Louis J. Yauchzi.

There were also present Frank J. Fee, of New York City, vice-president of the National Association of Master Plumbers, as guest of honor, and T. E. Kerwin, of Albany, chairman of the legislative committee of the New York State Association of Master Plumbers.

A letter of regret was read from National President A. C. Eynon, of Canton, O., expressing regret of his inability to attend the meeting and wishing the association every success.

President John H. Moran called the meeting to order at 10 a. m. and read his report, giving in detail the work of his office for the first seven months of his term and showing the gains and losses in membership. Among other things his report showed that new locals had been organized at Saratoga Springs, Catskill, Johnstown, Herkimer, Ilion, Frankfort, Mohawk, Ellenville, Cragsmore, and Hornell, as well as the addition of individual members at Huntington, Central Islip and Canton.

Other reports submitted were those of the secretary and treasurer, and that of Mr. Kerwin, the latter giving a detailed report of the work of the legislative committee for the recent legislative season. The general contracting bill and lien measures were thereupon discussed.

B. J. O'Donnell submitted a report of the doings of the recent national convention held at Galveston, Tex.

The action of Governor Dix in vetoing the Sullivan general contracting bill which passed both houses of the recent legislature and which provided for the separation of the plumbing, heating and wiring of public buildings, was disapproved, and the legislative committee was instructed to have the measure reintroduced at the next session of the legislature. The idea of having the provisions of the present plumbing law extended to the villages and smaller cities of the state was also referred to the said committee with power to act, likewise, the advisability of having a lien law introduced which will afford a better measure of protection to the trade than the present deficient law.

A recess was declared at noon and business was resumed at 1:30 p. m. The privilege of the floor was granted to Daniel J. Hogan, of Glens Falls, who greeted the officers in behalf of the local plumbers and briefly discussed trade conditions there. He expressed his thanks for being accorded this courtesy and remained throughout the afternoon session.

The important questions considered at this session related mostly to the establishment of public-comfort stations, public drinking fountains of the bubbling type, and the necessity of greater agitation on the part of plumbers for the advancement of sanitary conditions of our respective communities, and especially in those where there are no set rules or regulations for better construction and proper inspection.

Among other places referred to as an example was Watervliet, N. Y., which, though a city of considerable size and standing and with a law which made it obligatory for the appointment of a plumbing inspector and for proper installation of plumbing work, yet as far as could be ascertained was up-to-date without either a plumbing code, or an inspector. It was resolved to ask the Watervliet authorities to name an examining board of plumbers as required by the state laws, and provide for proper installation and inspection of plumbing, as is the practice of all progressive cities, and with a view of decreasing the dangers to the public health which arise because of lack of these modern necessities.

After a recess for dinner, the committee reconvened at 7:30. The privilege of the floor was extended to H. S. Gauthier, of Hudson Falls, N. Y., who addressed the meeting and expressed his thanks for this courtesy and assured the committee that he would gladly partake of good things which he felt were in store for him.

The evening session was mostly devoted to finishing up such matters as had not been taken up at the previous sessions, at the conclusion of which Frank J. Fee, vice-

president of the National Association, addressed the meeting at length on association matters of national interest.

The meeting was also addressed by Messrs. Fladd, O'Donnell, Lasette, Sheehan, Yauchzi, Brucker, Campbell and Beyer. These addresses contained reports as to matters in their respective localities.

H. S. Gauthier was elected a member of the state association and duly qualified as such.

The matter of the next state convention was discussed and the city of Troy selected for same. The convention will he held on the first Tuesday and Wednesday in March, 1912. The meeting then adjourned, it being 10:30 o'clock.

On the evening preceding the meeting Captain Daniel J. Hogan, of the local plumbers' association, entertained the members of the committee at the Glens Falls Club House, which was greatly enjoyed.

ADDITIONAL DATA ON PUBLIC-COMFORT STATION EQUIPMENT.

An Emergency Water Supply.

Builders of public-comfort stations will realize the importance of a continuous water-supply. In case of the failure of a main, or the necessary shutting-off of the main supply, the station might easily be thrown out of use at a time when it would be very undesirable to do so. A valuable accessory to a public-comfort station, therefore, would be a water-supply reserve system, whose only cost would be that of its purchase and installation, and which would be called into operation only when needed. A reserve-tank would be a part of the equipment.

Location of Urinals.

The urinals should be located as near the entrance of the department which contains them as possible. They are used more frequently and should therefore be more accessible than other fixtures. It is considered better that the water-closets and urinals should not parallel each other, to avoid confusion naturally arising by passing to and fro in the passage-way. If their constructional necessity demands this, a greater width of passage-way should be provided. All urinals should be thoroughly vented, and an effective flushing apparatus automatically operated is a necessity. It must be remembered, however, that no matter how perfect the venting or flushing systems, they cannot possibly do away with the necessity of care and vigilance on the part of the attendants. The urinals must be kept clean by frequent use of soap and water, assisted by a scrubbing-brush and elbow-grease.

Lavatories.

Lavatories should be located close to the other fixtures and easily accessible by the users of the conveniences. They should not be scattered through the department, nor placed in out-of-the-way corners. All parts of the lavatories should be easily accessible. Whether they should be of pedestal type or supported by wall-brackets, and of what material they should be composed, must be determined by considerations of cost and floor-space allowed. Plain cast-iron porcelain-enameled lavatories with integral back, are inexpensive, durable and sanitary fixtures. Many stations have pedestal lavatories, which being removed from the wall permit all the surface to be cleaned. Solid porcelain lavatories are increasing in popularity. They are of exceptional strength and have an impervious surface of an exceedingly durable character, capable of withstandoing the severe usage to which public conveniences are subjected.

Construction Costs.

The Cleveland, O., station cost $9,000.

New York City's public-comfort stations average in construction-cost from $20,000 to $25,000 each.

The Brookline, Mass., public-comfort station cost about $6,000.

In Brooklyn, N. Y., six public-comfort stations averaged in cost from $14,600 to $24,600. Their cost of maintenance averaged $5,000 each. It is estimated that these six Brooklyn stations in 10 months served 8,004,309 men and 1,267,827 women.

The stations at Washington, D. C., cost $25,000 each for the first two, the third being erected at a cost of approximately $22,000.

The public-comfort station in Rochester, N. Y., was constructed in connection with the building now used for municipal offices. It cost about $20,000. It is located in the central portion of the city. The approximate cost of maintenance is $2,600 per year.

Interesting Figures of Maintenance.

The inquirer as to maintenance-cost will be interested in the itemized account contained in a report on two well-patronized stations:

Salaries, 8 employes, 2 each at $2.10, $1.90, $1.25 and $1.10	$1,635.00
Salaries substitutes (for legal holidays)	200.00
Salaries superintendent (to add to salary of office man)	300.00
Electric current	820.00
Coal	700.00
Laundry	120.00
Soap	180.00
Cleaning material, oil, waste, polishing cloth, etc.	45.00
Brooms, mops, general supplies, printing, etc.	100.00
Toilet paper	200.00
Repairs to buildings, plumbing, motors, boilers, etc.	200.00
	$7,500.00

CONVENTION DATES.

January 24 and 25, 1912.—The 20th annual convention of the Illinois Master Plumbers' Association, at Decatur, Ill. Headquarters will be established at the St. Nicholas Hotel. The officers of the association are: President, F. U. Patterson, Springfield, Ill., vice-president, Wm. J. Hilliard, Elmhurst, Ill.; secretary, W. C. Haviland, Aurora, Ill.; treasurer, Thomas Cody, Peoria, Ill.

RAHWAY, N. J., MASTER PLUMBERS ORGANIZE.

A new local association of master plumbers was organized at Rahway, N. J., on Wednesday, October 25th, with the following officers and members: President, W. H. Cloke; vice-president, Thos. Roarke; secretary, J. J. Marsh; treasurer, A. L. Smith; Walter Brooks and R. L. McVoy. It is expected that before many weeks every eligible master plumber in town will have signed the roll of membership. State President Geo. Turner, of Asbury Park, assisted by a number of his officers, aided in the organization.

OBITUARY.

Ed. Schuster.

We regret to announce that Ed. Schuster, who represented the Cleveland Faucet Co., Cleveland, O., in the south and west territory, was killed in an automobile accident recently in Birmingham, Ala. Mr. Schuster was well known to the trade, and his death will be regretted by many friends.

ADDITIONAL OPINIONS OF LATRINES.

John B. Anderson, M. D., health officer of Spokane, Wash., adds to the opinions expressed in our latrine editorial in the following:

"We do not favor latrine installations, though we permit them in sections of the city not sewered.

"Latrines at best are makeshifts and unless directly controlled by close supervision and afterwards watched closely, become a menace. In most cases they are open and exposed to fly nuisance. We shall make an endeavor in the coming season to have a wholesale condemnation of the same within our city, substituting therefor either earth-closets or else the sanitary device originated and designed by Dr. Lumsden of the U. S. marine service. This type has been used in North Yakima, this state, during the past summer, which, coupled with other sanitary measures, has reduced the typhoid mortality for that location about 20 per cent."

Eugene W. Scheffer, secretary of the Department of Health, New York City, made the following reply:

"In the Sanitary Code of the Department of Health there is no prohibition against latrines. There is, however, one in the building code of the city of New York.

"The Department of Health will not prohibit their use unless a nuisance is created thereby."

W. C. Folsom, Chief Sanitary Inspector at Cincinnati, O., sends a comprehensive reply to our questions, which we take pleasure in giving herewith.

1. Yes. The city ordinance is as follows: "Wherever a public sewer is provided in any street or alley all the premises abutting upon the same, unless they are vacant lots, shall be connected to such public sewer, and all soil-pipes, waste-pipes, drain-pipes and pipes conducting rain-water or surface-water shall be connected thereto, and wherever such sewer is provided in front of any premises it shall be unlawful to drain into the gutter of the street for any purpose. All such sewer connections on all existing buildings shall be made immediately." * * * "As soon as it is possible to connect with a public sewer, the owner must have such cesspool or privy vault emptied, cleaned out and disinfected and filled with fresh earth, and have a sewer connection made in the manner herein prescribed." * * * "In all premises hereafter connected to the public sewer where vaults are now in existence on such premises, such vaults must be abolished, emptied and thoroughly disinfected and filled with earth, or else, with the approval of the Commissioner of Buildings, covered with stone or concrete, at least four (4) feet below the surface of the earth, and no new vaults, catch-basins or school sinks may be constructed on any premises. In places of such abolished vaults, outside water-closets may be constructed as hereinafter provided, and used in connection with existing tenement-houses, and they may be connected with, and their contents discharged into such public sewer. Such water-closets must be constructed of vitrified earthenware or porcelain-lined cast-iron and have suitable flushing apparatus, and must in every respect be an approved water-closet outfit, provided that suitable provision be made to prevent freezing and to keep the closets at all times in proper working order."

2. New privy vaults are permitted to be constructed only when there is no sewer available. I would say in this connection that all of the city streets are not sewered as yet. At present there are about 3,000 vaults within the city limits. These are mainly in the outskirts and are being condemned as fast as possible by the health and building departments.

3. We believe that the day of the privy vault is past and that all should be abolished. As a rule they are a nuisance from the odor standpoint. They breed flies, mosquitoes and other insects, which in turn may transmit disease. We believe that the average person will save money in the long run by the installation of flush toilets and in the abandonment and filling of the privy vaults, because of the prices charged for vault cleaning. The topography of this city causes practically all the vaults on the hillsides to fill with water and overflow, which condition can be remedied only by complete connections. For houses where there is no room or facilities for flush inside toilets, the law permits the erection of anti-freezing patented flush toilets in the rear yards.

C. H. Wheeler, Health Officer of Portland, Ore., writes:

1. No. But the plumbing ordinance requires each toilet to have a separate tank, which can be construed to include latrines.

2. No. We have had them all taken out of the public schools, and individual toilets installed in place. There is only one other that I know of in the city and that is for a foundry, situated about 50 ft. from the foundry in a building by itself.

3. Everything from a sanitary point of view is against the use of latrines. First, they are not flushed often enough. Second, the surface is not thoroughly washed. Third, water in pan not deep enough to submerge fecal matter. Fourth, impossible to keep clean on account of the rough surface, many joints, and corners; also impossible to keep the air in toilet-room clean on account of fecal matter adhering to sides of latrine and being allowed to stand from 15 to 60 minutes.

GOVERNMENT CONTRACTS TO BE AWARDED.

Supervising Architect James Knox Taylor, Treasury department, Washington, D. C., will receive sealed proposals as follows:

Until 3 p. m., on Nov. 27, 1911, for the construction including plumbing, gas-piping, heating apparatus, electric conduits and wiring and interior lighting fixtures of the U. S. postoffice at Huron, S. Dak., The building is to be two-stories and basement, with a ground area of approximately 6,100 sq. ft.

Until 3 p. m. on Nov. 29, 1911, for the construction of a one-story, basement, and a mezzanine-story stone-faced building of approximately 4,800 sq. ft. area, fireproof construction throughout, including plumbing, gas-piping, heating apparatus, electric conduits, and wiring and lighting fixtures, for the U. S. post-office at Bloomington, Ind.

Until 3 p. m. on Dec. 2, 1911, for the construction of a one-story and basement brick and stone-faced building, covering approximately 5,600 sq. ft. ground area, including plumbing, gas-piping, heating apparatus, electric conduits and wiring, and lighting fixtures, for the U. S. post-office at Parsons, Kans.

Until 3 p. m. on Dec. 4, 1911, for the construction complete, including plumbing, gas-piping, heating apparatus, electric conduits and wiring, and interior lighting fixtures, of the U. S. post-office at Homestead, Pa. The building is one-story and basement and has a ground area of approximately 5,400 sq. ft.

Until 3 p. m. on Dec. 5, 1911, for the construction, complete including plumbing, gas-piping, heating apparatus, electric conduits and wiring and interior lighting fixtures, of the U. S. post-office at Union City, Tenn. The building will be one-story with mezzanine and will have a ground area of approximately 3,200 sq. ft.

All proposals should be in accordance with drawings and specifications, copies of which may be obtained from the custodians of the above sites or from the office of the Supervising Architect at Washington, D. C.

RED LEAD FOR PIPE JOINTS.

By W. H. Wakeman.

For a long time I have been opposed to the use of red lead on pipe and fittings, for two reasons. First, because the fitter generally uses too much, and puts it on the inside of every fitting. Second, when it becomes necessary to take these joints apart, it is almost impossible to unscrew them, hence the fittings must be broken. Of course it does not pay to save the fittings on small and medium-sized work, unless the joints come apart readily, as it is much cheaper to break a 50-cent fitting than to spend a dollar's worth of time trying to unscrew it, especially if the fitting is cracked in the unscrewing process, as it frequently is.

Sometimes gas-fixtures are found nearly full of lead when they are taken down for any cause. As there was not enough pressure in the pipes while it was in service to force it through into some of the very small passages where it would entirely stop the flow of gas, and thus compel its removal, it prevented good service, and nobody knew the cause.

The worst case that I know of, where too much lead was used, was on the ventilating pipe of a water-closet,

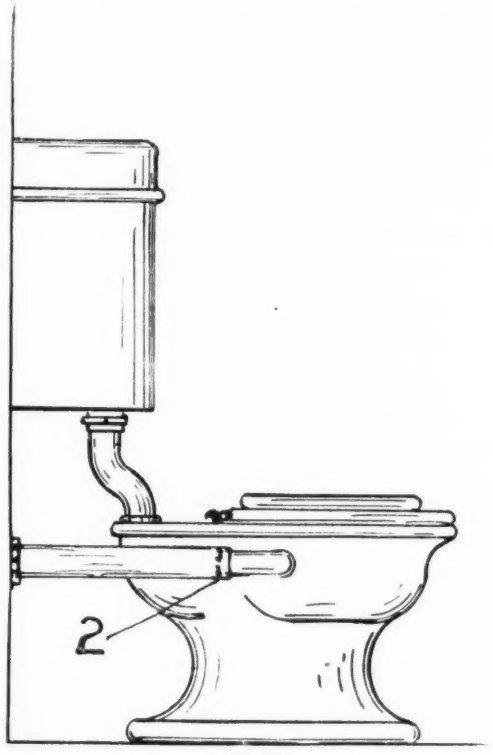


Fig. 1.

as shown at 2, Fig. 1. It was not a screwed joint, but when the parts were clamped together the lead was forced out of its proper place until the passage was entirely closed by it. Failure to secure ventilation called attention to the defect, and the obstruction was removed. To test such work, hold a lighted candle close to the pipe-opening, and if the installment is doing what it was intended for, the flame will be slightly deflected by the draft. If it is not, the matter ought to be investigated at once.

The flow of water through small pipes is frequently retarded by an excessive amount of red lead in or near the fittings, especially if water was not turned into the pipes until after the lead had become hardened in place. For this reason I seldom put lead on the inside of a fitting (if I use it at all), but apply it on the pipe-thread only. I remember one exception to this rule, where only

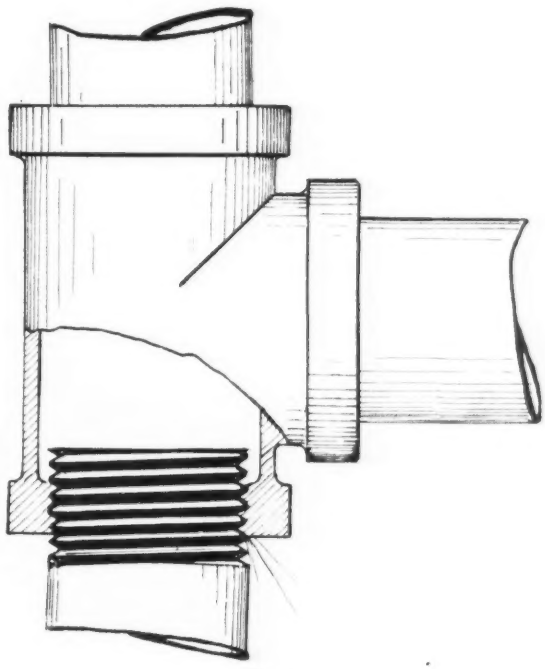


Fig. 2.

one galvanized-iron tee was available at that time. It had been used once, but was all right except that screwing ordinary tapering threads into it had expanded the metal. Lead was put on the threads, which were then screwed in until apparently tight joints were secured. When cold water under 60-lb. pressure was turned on, one joint leaked. The pipe was taken out and more lead carefully put on every thread. When tried again the leak was still in evidence, consequently if another tee could have been secured easily, this one would have gone into the scrap-heap. Although thoroughly prejudiced against the practice of putting lead in fittings, I was willing to give it a trial, and the result was a tight joint.

While this is not a new idea to steam and water-fitters, it is sure to interest some readers who are looking for points along this line, Fig. 2 illustrates my first attempt, showing how the lead was scraped off when put on the threads and flat pipe, but it causes the pipe to turn hard lead on the inside of the tee, consequently the pressure forced it out into the crevices and prevented leakage.

Graphite might not have had the same effect in this particular case, but it was worth trying under the same conditions. Lead will work into spaces left by broken threads and flat pipe, but it causes the pipe to turn hard when making the joints, consequently the fitter thinks that he has a tight joint, when excessive friction is responsible for the hard work. Graphite is a lubricant, hence when mixed with cylinder oil and kerosene, it lubricates the threads and under ordinary conditions will allow the pipe to turn comparatively easily until the two

parts are brought metal to metal, with no chance for filling between them. The kerosene prevents it from becoming too stiff for convenient use.

Another point to be considered is that graphite seldom or never has injurious effect on valves, cocks, or other appliances into which it may be carried by the flow of water or steam through the pipes, which is more than can be said of red lead. A few days ago I took down some

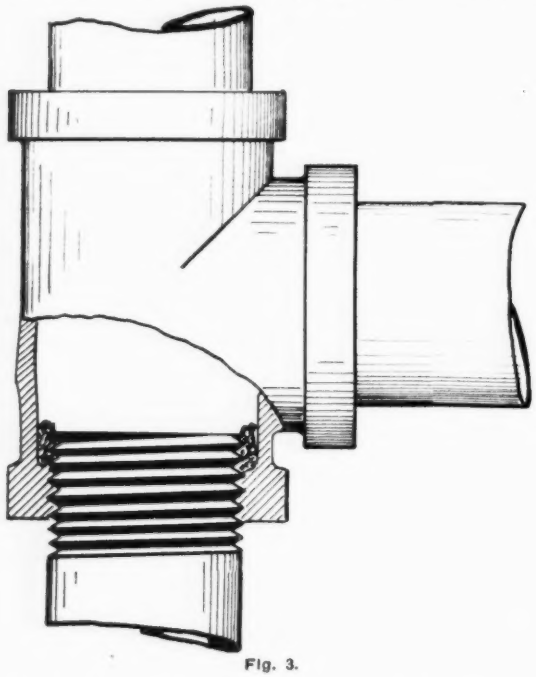


Fig. 3.

galvanized water-pipe that I put up more than 15 years ago. The joints were still tight, but they came apart easily without crushing the pipe or hammering the fittings. Dixon's flake graphite mixed with cylinder oil was used on this job.

A short time ago the foreman of a shop informed me that the joints in some steam-piping in his plant leaked soon after the line was installed. Repeated calking did not prove a remedy, causing annoyance and unpleasant work. While changes in the plant were progressing, it was necessary to take these joints apart, and much trouble was anticipated, but when the job was begun they came apart easily, because the threads were not screwed up tight.

I have seen steam-fitters who apparently only cared to get pay for their time, as they did not intend to use the piping after it was installed, but in this case the engineer superintended the job, and it is only reasonable to suppose that he would make what appeared to be good joints, to save himself trouble in the future, and this was undoubtedly the case. My theory is that some thick substance resembling lead was put on these threads and the resulting friction convinced the workmen that good joints were made, but when steam was turned on, the material was blown out, and of course calking was not effective under those conditions. If every internal and external thread had been nicely painted with graphite (using a common brush for the purpose) the joints would have been made up metal to metal, thus preventing future trouble, or if slight leaks had appeared, the calking tool would soon put them out of business.

THE LOW-PRICE GAME DOES NOT PAY.

Every business has its "nigger in the woodpile," and in the plumbing world it's the low-price game and what goes with it. Very little does go with a low-priced article except the salesman's happy smile as he pockets your order, says "Sanitary Pottery."

No job is so cheap that it can afford to install low-priced fixtures because they are cheap. No plumber can afford to stake his reputation on ware which, by its very appearance, proves its inability to stand a test of time.

Go beneath the surface to discover the real quality of what you buy. If you are purchasing closets, turn the fixture over and look at the unglazed foot. First-class sanitary manufacturers use a transparent glaze through which one may see the true color of the body. If the unglazed foot shows a blue white, almost matching the color of the glazed surface, you may be pretty sure it's what you want, providing the maker's trade mark also appears.

Tank fittings—all brass work, in fact—but tank fittings especially, afford splendid opportunities for the "Cheap John," until you press dents in them with your fingers.

We read an interesting experience of a roofer the other day, which we here relate:

"The other day I had just placed an order for some slate that looked very, very cheap on the price list.

"Shortly afterward I met Jim Smith, a friend of mine. Jim started 10 years ago in the plumbing business, did all the work himself and had a dingy little shop in a basement.

"Today Jim has an up-to-date plumbing store, runs 30 journeymen, does the biggest business in town and gets the best prices.

"Jim has just refused to bid on a good-sized plumbing job because the man had bought a lot of cheap fixtures at auction.

"Jim said that he knew no workman could do a good job with such fixtures, and moreover that a man who bought such trash was not willing to pay for decent workmanship. So he turned the man down.

"After I left Jim, I got a-thinking. Surely that explained Jim's success in the plumbing business. If he can build up the biggest business in town with good material and good workmanship and get his price for it, I can do the same in the roofing line.

"But I mustn't use 'cheap' goods. That would spoil my work and my reputation.

"There is one thing I did after I had that talk with Jim, I went into the telegraph office and wired those 'cheap' slate people to cancel my order.

"I am nothing out of pocket, for I will have no trouble in getting that slight price difference from the owner."

Patronize the best and the best will patronize you.

Caldwell, Idaho.—S. D. Hartkopf has sold his plumbing business to A. W. Bennett & Son.

Portland, Ore.—The McCusker Co. has secured the contracts for plumbing and heating the west wing of the new court-house. Their bid on the heating was $70,727 and on the plumbing $19,717.

Aberdeen, S. Dak.—The Bell Plumbing Co., established by M. E. Bell about five years ago, has been purchased from him by M. F. Jacobs and E. B. Bennett. Mr. Jacobs has been for some time employed by the Bell Co., and Mr. Bennett has recently come to Aberdeen from Mineral Point, Wis., where he had a thriving plumbing business. The new firm will continue at the old location in the Beard block.

QUALITY OF PIPE NEEDED FOR SOIL, WASTE OR VENT PURPOSES.

Editor "Domestic Engineering"—Your kindness in answering my other questions prompts me to ask some more. First, I will say that the job I asked about works all okay, piped with one pipe to supply both radiators. I ran over a one and one-half inch pipe and took off to the upstairs radiator horizontally from the side and turned up with an ell to the radiator.

I have just read in your last issue the new plumbing ordinance of Galva, Ill., with some interest, and would like to ask why it is considered necessary to use extra-heavy soil-pipe for the vertical pipes which are to extend to the roof for ventilation. The ordinance also speaks of revent-pipes of galvanized iron, tested to 500 lb. per sq. in. I don't fully understand just what a revent-pipe is, but take it to be an air-pipe, and what possibility is there of its ever having to stand a fraction of such pressure?

One more thing. In the various pressure systems of water heating, the pressure is spoken of as causing the more rapid flow in the system. Now, do I understand that if we were to take a plant that is at work with the thermometer at the boiler at 160 deg., plug up the expansion-tank and with a pump put a pressure of 10 lb. on the system and maintain the temperature at 160 deg. at the boiler, the water would circulate faster? By what theory of flow would you account for this increased flow, the pressure being equal all over the system and the water having the same units of heat in both cases? When the temperature at the boiler is increased, as is possible under pressure, to 200 deg. or more, it seems to me that the radiators will give off more heat, making a greater difference between the flow and the return, and thus increase the circulation, thus showing the increased flow to be due to the increased heat made possible by the pressure, and not to the fact of pressure alone. I believe we are generally using much larger pipes than necessary, because in the radiators that I was afraid would not heat, I found that the little hole left in the valve to prevent freezing kept them warm enough for the present weather. I did not try a thermometer to see how they compared with the boiler.

Milton, N. Y. H. H. H.

All competent authorities on sanitation have agreed upon the necessity of the use of extra-heavy cast-iron pipe for soil, waste or vent purposes within buildings. To the unexperienced or to the layman this may appear unwise and extravagant, but men of experience have found that standard cast-iron pipe does not meet the requirements, will not stand the strain nor the test which is put upon such buildings, and will rust through much quicker. Vent-pipes rust through more readily than soil or waste-pipes, due to the condensation of vapor above the water-line acting upon the pipe, which is unprotected by the scum formed by waste matter below the water-line.

The same reasons apply to the use of galvanized pipe for vent purposes. A revent-pipe is, of course, an air-pipe, and while it is not subject to the strain imposed by water-pressure, it is subject to what is probably harder upon the life of a pipe, viz.: the rust caused by condensation of vapor within, laden very often with acid fumes. This causes a rapid deterioration, and if the pipe is not of sufficient weight of material—or is not protected by a good coat of galvanizing or tar—it soon rusts out.

The requirement of a 500-lb.-per-sq.-in. test is simply a precaution to insure the use of standard wrought pipe which will not be subject to cracks along the weld, so common in cheaper light-weight material. Such pipes are designed to carry air and gases, which are more deadly to health than all the water-leaks that could occur in any building. Consequently, the importance of the best materials in such pipes must not be overlooked in any ordinance.

Answer to your question on pressure systems is deferred until next week for lack of space.

THE BACK-VENTING OF FIXTURES.

Editor "Domestic Engineering".—Do you consider it necessary to back-vent each fixture in a job of plumbing where we have a sewer system? Also, is it necessary where installed in country homes?

Kentucky. C. & O.

The question is incomplete in form. Many things are to be considered in venting. As an abstract general question we can only answer it in the same way by saying "Yes." And in country houses it may be more necessary than anywhere else.

"Back vents" are for the protection of trap-seals and the circulation of air in the vent and waste pipes.

Trap-seals are for the purpose of preventing sewer air and gases from entering the houses. Sewer gas may not be an active poison or source of infection, but it is surely a nuisance. Public sewers are often heavily charged with gas from the leaky street mains, especially in winter when frost prevents the escape of such gas through manholes, etc.

The absence of vents means loss of seal by siphonage or back pressure. It's better to be safe than penurious. Better pay the plumber than the undertaker.

RABBIT-LIKE BOILER BREEDS SUPERABUNDANCE OF HEAT-UNITS.

Editor "Domestic Engineering":—I have been reading reports of boiler-tests and I am enough of a student to wish to understand what I read, but have found something I fail to fathom. Kindly enlighten me.

In reading the report of a test of a certain boiler I find that the boiler in 8 hours consumed 720 lb. of soft coal, or 90 lb. per hour. The final result shows the boiler, at this rate of combustion, to have a capacity of 4,048 sq. ft. of radiation.

I have read that each square foot of radiation transmits 250 B. t. u. per hour, hence 4,048 ft. would transmit 1,012,000 B. t. u. per hour. Deducting ash and moisture from the 90 lb. of coal, or 15 per cent, leaves 76.5 lb. of coal as the available fuel from which was generated and utilized 1,012,000 B. t. u.

Dividing 1,012,000 by 76.5 gives 13,229 B. t. u. absorbed by the water per pound of coal. Now I am told there

are 12,000 B. t. u. in a pound of coal, therefore the water in this boiler absorbed 110 per cent of the heat units in the coal. This does not surprise me, for many concerns get something for nothing, but the thing that sticks me is that the report shows that the stack temperature was 1,000 deg. Now, if the report of another expert, that under these conditions 50 per cent of the heat goes up the stack, is true, then this boiler generates 160 per cent of the heat which chemists are able to find in the coal.

Kindly advise me in these columns where our chemists "are at."

This boiler contains about 150 sq. ft. of heat-absorbing surface. If 150 ft. of heat-absorbing surface will absorb 1,012,000 heat units per hour then one square foot will absorb 6,747 heat units per hour. A noted authority states that 3,000 B. t. u. is about the maximum absorbing power of a square foot of surface. Who is right and who is wrong? I wish to know the facts.

B. O. Her.

NAMES AND ADDRESSES OF TWO FIRMS WANTED.

Who Makes the "Osico" Radiator?

Editor "Domestic Engineering": Can you give me the name of the manufacturers of an ornamental radiator called the "Osico"?

Baltimore. X. Y. X.

We regret that we do not find record of the makers of this style of radiator. If any of our readers can give the desired information, we shall be pleased to forward it to the inquirer.

Where Are the "Old Dominion" Boilers Made?

Editor "Domestic Engineering": Can you give me the name and address of the firm making a steam or water boiler under the name of "Old Dominion"? We have some repairs to order for one of them but do not know where to locate them.

Oakland, Md. A. D. Naylor & Co.

Can some of the readers of this department supply the address needed? We shall be glad to publish it if sent to us.

Yoakum, Tex.—Polk Richmond have opened a plumbing establishment in the Carnes Block.

Connellsville, Pa.—Chester & Fleming, consulting engineers of Pittsburgh, have been summoned to advise the city council on plans for the construction of a large sewage-disposal plant.

Trenton, N. J.—Journeymen plumbers, together with the master plumbers, are complaining bitterly anent the class of work one of the plumbing inspectors is allowing to pass, according to report. With this thought in mind, and to have evils corrected, the journeymen plumbers have appointed a committee to investigate jobs which it has reason to believe do not measure up to the standard. They claim that work now being approved in some instances is considerably worse from a sanitary standpoint than before the office of plumbing inspector was created, while they also charge that considerable discrimination is being shown. The Sanitary Committee of the Trenton local which has the matter in charge will investigate any complaints in the future, and if, in its judgment, work does not measure up to the standard required, it will bear the expense of having it uncovered. The committee will also make it a point to look over what work it can, regardless of whether complaints are filed or not, with this end in view.

NEXT TIME YOU WRITE TO "DOMESTIC ENGINEERING" REMEMBER OUR CHANGE OF ADDRESS.

We have made another change for the better. We have moved into a 7-story building in which our printing presses, linotype machinery and bindery are also installed. Our facilities for serving the plumbing and heating trades efficiently have been increased and we are at home to all comers for congratulations and co-operation. You know what moving is so you will excuse this brief notice. We may tell you more about our improvements in the near future. In the meantime, our address is no longer 443 South Dearborn St., but

445 Plymouth Court, Chicago.

It's easier to write. It's easy to memorize. Think of Plymouth Rock, and when you are courting our attention. Plymouth Court is the right address. Visitors to Chicago will have no difficulty in locating us. Our new building is immediately in the rear of the old one, located between State and Dearborn streets, off Van Buren. Come in and see us if you can. Anyhow write us a line or two now and then. Did you get that new address—445 Plymouth Court? Our telephone number is Harrison 754.

WISCONSIN NEWS NOTES.

Milwaukee, Wis.—The Board of School Directors has advertised for bids to install plumbing in the Milwaukee Public School of Trades for Boys, consisting of work in the east and west wings and the boiler-house. The bids will be received in the offices of the board. Frank M. Harbach is secretary.

Monroe, Wis.—At a special meeting of the committee on grounds and buildings of the Monroe board of education, the Monroe Plumbing & Heating Co. was awarded the contract for plumbing in the south school building at a cost of about $650.

Sparta, Wis.—The city's $7,000 new water-works addition is now in working order to entire satisfaction. The capacity of the new pump is 1,500,000 gal. per day, minimum. Engineer Rasmusson of the Allis-Chalmers Co., Milwaukee, has made the final adjustments on the pump and City Engineer Gregory now has charge of it and is pleased with the way it works.

McCabe & Finzel Do Good Business.

Lawrence, Mass.—The McCabe & Finzel Co. has the following work on hand: Plumbing and steam-heating in the eight-apartment house for Julius Gens on Newbury street; plumbing, steam-heating and ventilation in the Lexington Hall, Lawrence street; plumbing in the six-partment house and two stores for George Cleveland, Park street; plumbing and heating in the residence of Maxime LaFontaine, North Andover; plumbing in the six-apartment house and two stores for George W. Bradshaw, Newbury street; plumbing in the eight-apartment house for Joseph Saliba, Lawrence street; steam-heating in the residence of William Clements, North Andover.

Tacoma, Wash.—The plumbing contract on the bungalow being erected by W. C. Wheeler, jr., has been let to J. J. Dunseath.

Knoxville, Tenn.—M. F. Rourke & Co. have been awarded the heating contract, amounting to $5,378, for the heating-system in the court-house.

Navarro, Tex.—The city council has adopted an ordinance providing for the construction of a waterworks system to cost about $25,000.

Yoakum, Tex.—Polka & Richmond is the name of a new plumbing firm which has opened a first-class shop in the building recently erected by S. A. Carnes & Son on Hugo street.

Macon, Ga.—The name of the Alexander & Luquire Plumbing & Heating Co. has been recently changed to the H. F. Luquire Plumbing & Heating Co.

San Diego, Cal.—The contract for plumbing work in the jail has been awarded by the supervisors to Charles Julian, whose bid of $11,704.22 was the lowest. The heating contract has been awarded to H. D. Hobbs, the price being $1,950.

DEDICATION OF MEMORIAL TABLET TO THOS. J. WATERS.

On Sunday afternoon, Oct. 29, 1911, an important dedicatory service took place at the Thos. J. Waters School, Wilson and Campbell avenues, Chicago. It was a fitting tribute to a life-time of unselfish usefulness, and many heating and ventilating engineers who had been intimately associated with Mr. Waters in his work attended the services. The Illinois Chapter of the American Society of Heating and Ventilating Engineers was well represented.

The service was opened at 2 p. m., the following interesting program being carried out:

1. Invocation, Rev. James Kiely.
2. Chairman of the Tablet Committee, George McKenzie.
3. Song, "Vacant Chair," Daughters of Isabel; Mrs. Raridon McShea, Leader.

1909
THOMAS J WATERS
CHIEF ENGINEER OF THE BOARD OF EDUCATION CITY OF CHICAGO 1885-1909
INVENTOR OF THE WATERS SYSTEM OF HEATING AND VENTILATION
THIS TABLET IS ERECTED BY THE CHICAGO PUBLIC SCHOOL ENGINEERS
ASSOCIATION LOCAL 143 I U OF S E AND HIS ASSOCIATES IN THE
EMPLOY OF THE BOARD OF EDUCATION IN MEMORY OF HIS GENIUS
HIS LOYAL FRIENDSHIP AND HIS PATRIOTISM
AND THAT HIS NAME MAY BE PERPETUATED AS ONE
WHO GAVE HIS BEST YEARS TO THE PUBLIC WELFARE
DEDICATED A D 1911

Thos. J. Waters' Memorial Tablet, Dedicated Oct. 29, 1911.

4. Presentation of Tablet, Walter S. Caldwell, President of Local No. 143, I. U. of S. E.
5. Ribbon Girls Unveiling Tablet, Ruby O'Connor and Emma Georgia Hand.
6. Reception of the Tablet, Dr. James B. McFatrich, President Board of Education.
7. Song, "Nearer, My God, to Thee," Daughters of Isabel; Mrs. Raridon McShea, Leader.
8. Address, "Royalty of Labor," John D. Shoop.
9. Song, selected, Choral Society.

Thomas J. Waters, Chief Engineer of the Board of Education of Chicago, Ill., died at his residence Thursday, Feb. 25, 1909, after a short illness of pneumonia.

Mr. Waters was born in Ireland 59 years ago, and when very young his parents moved to Canada. After having graduated from the Ingersoll public schools, he came to Chicago and entered the employ of Walworth, Hubbard & Co. Later he engaged with Crane Bros., with which concern he remained until appointed engineer of the Dore School in 1872. This position he held until 1885, when he was promoted to Chief Engineer of the Board of Education.

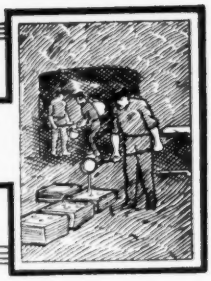
After many years of study, Mr. Waters perfected a system of heating and ventilating that is now copied throughout the world. This system allows all rooms to be evenly heated as well as ventilated, without any direct radiation in the rooms. All radiators are centrally located in the basement, under the direct charge of the engineer, and all mixing-dampers which control the temperature of the room are located at the chamber, thus making a compact heating and ventilating unit and saving the expense of steam-piping and double ventilating-ducts.

Mr. Waters was a charter-member of the American Society of Heating and Ventilating Engineers, serving as a member of the council in 1895 and as vice-president in 1906. He was also a member of the Board of Governors for the National as well as the Illinois Chapter, and was past-president of the latter.

During the Paris Exposition plans and specifications were submitted by him on the most modern system of heating and ventilating of school-buildings, and they received honorable mention. He was highly esteemed by all who came in contact with him in public or private life, on account of his genial manners and for the strict impartiality with which he handled all matters.

The illustration shows the dedicatory tablet, whose symbolical details were executed to perfection by John Paulding, the noted Chicago sculptor.

THE METAL MARKET



THE CANCELLATION OF THE HILL ORE LEASES.

An announcement has been made from authoritative sources that the U. S. Steel Corporation will cancel its leases for the Hill ore lands. Briefly, the U. S. Steel Corporation contracted in 1906 to lease the ore lands belonging to the Great Northern Railway in Minnesota. The royalty was 85 cents a ton in 1906, increasing by 4 per cent a year. At the time this lease was made it was considered an especially high price, and moreover, the increase in the amount paid for ore in later years was considered bad practice. The announcement of the cancellation to be made, therefore, probably leaves the U. S. Steel Corporation in a better position, but at the same time it means cheaper ore, and the blast furnace interests will probably obtain their ore 25 cents a ton cheaper next year, as well as a reduction in freight rates. Consumers are not anxious buyers, while the furnaces are endeavoring to sell iron at every turn. Present prices are now being accepted for first quarter, and in many cases first half, of 1912 delivery. Prices are as follows:

No. 2 Southern foundry, Birmingham	$ 9.50 to $10.00
No. 1 Northern foundry, New York	15.25 to 15.50
No. 2X Northern foundry, New York	15.00 to 15.25
No. 2 plain, Northern foundry, New York	14.00 to 14.75
No. 2 Northern foundry, Chicago	14.50 to 15.00

OLD IRON.

The market is not as satisfactory as a week ago, and a week ago it was thought that conditions could not be worse. The mills are taking scrap on contract a little more freely, but continue to reject on the slightest pretext. Quotations for New York delivery are as follows:

No. 1 yard wrought, long	$10.25 to $10.75
No. 1 yard wrought, short	9.25 to 9.75
Heavy-melting steel scrap	9.25 to 9.50
Machinery cast	9.75 to 10.25
Wrought pipes and tubes	8.50 to 9.00
Malleable castings	9.75 to 10.25
Wrought turnings	5.25 to 5.75
Stove plate	7.75 to 8.25
Light iron	3.75 to 4.25

LEAD.

It is generally believed that some of the important consumers, if not sellers, of lead were short of material when the recent advance occurred. There has been very good buying of lead in St. Louis market. Consumers purchase freely, and future deliveries in New York will be at 4.25 cents and in St. Louis at 4.15 cents.

SPELTER.

Prices are firm, and there seems to be a shortage of stock. The production is not much larger than the present consumption, and this gives considerable technical strain to the market. Sales have been made in New York at 6.35 cents and in St. Louis at 6.20 cents.

BETTER BUYING OF COPPER.

While the export figures show that the foreign taking of copper during October was not large, it is well known that foreign interests have purchased freely for November shipment, and the exports during that month will be large. Domestic consumers are buying more freely, and the copper market seems to be in considerably better shape. Prices are steady and unchanged at 12.50 cents for Electrolytic and 12.62½ cents for Lake, but with the continued hand-to-mouth buying it would be very easy for the largest seller to advance quotations materially. The exports for the first 26 days of October amounted to 17,000 tons.

AN ADVANCE IN TIN.

An important technical ruling was made in the London Metal Exchange relative to the delivery of tin which was thought would put an end to the corner, but instead prices have advanced and tin is now selling around 42 cents compared with 39 cents a month ago and 41 cents a fortnight ago.

HERE AND THERE IN THE PLUMBING AND HEATING TRADE.

Virginia, Minn.—The Virginia Heating & Plumbing Co. has recently secured the contract for laying heating mains at Eveleth, Minn. The contract amounts to $19,600.

Hazleton, Pa.—The Freeland Supply Co. has the contract to install a heating plant in the Grand Opera House.

Minneapolis, Minn.—The contracts for heating and ventilating systems for the Barnum (Minn.) high-school, have been awarded to F. S. Spencer.

Peoria, Ill.—The Dailey & O'Brien Co. is busy with the contract for plumbing work on the New Jefferson Hotel. The firm is employing 25 plumbers on this job, which is one of the large contracts of the season. Among other contracts now on hand, are two store buildings, two flats, and five houses.

York, Pa.—The York Heating & Ventilating Co. has a number of contracts in hand, here and elsewhere. Among them are: Bear's department store; Manchester Hall; a system for supplying and controlling the high-pressure steam to the dry heaters for the I. Unterberg & Co.'s shirt factory; the plant of the West Manchester Hosiery Co. Recent installations include: a battery of boilers in the Central Garage building, to supply heat to the Bacon Apartments, and a pressure domestic water service system for the three farms and country residence of Samuel Small, near Emigsville.

Butte City, Mont.—Frank Zaum is busy installing heating apparatus these days, having recently received a carload at Rosebud, for contracts there, and two carloads for use in work here.

Ames, Ia.—E. A. Musgrove and J. L. Johnson, who have conducted the Fourth Ward Plumbing & Heating Co., recently sold their business to A. L. Chilson and Sam Ochampaugh.

Macomb, Ill.—The contract to install septic tank, sewer, and plumbing at the county farm, has been awarded to the Macomb Sheet Metal Works for $1,632.

Williston, N. Dak.—Bell Bros., of Minot, have purchased the plumbing business conducted by J. C. Charles, and have placed Harry Cook in charge.

Springfield, O.—For nearly 25 years B. A. Higgins has conducted his plumbing establishment in the same location, known formerly as the Grand Opera House block and now as the Columbia, but he has found a change desirable, and will hereafter combine his shop with his residence, 505 Linden Ave.

Albany, Mo.—Fred Thomas, W. O. Herald, and Tom Wilson have bought the plumbing and implement stock of Lee Reece, and will continue the business at the same location.

Domestic Engineering "First-Aid-to-the-Injured"

Postal Card Cartoon—No. IX.

The Big Fish That Got Away

HOW IS IT THAT ALL THE BIG FISH GET AWAY FROM ME ?
HE COULD BE DOING THIS IF HE USED THE RIGHT KIND OF TACKLE
LOW PRICE LINE
HEY, MISTER ! YOU'LL NEVER CATCH 'EM WITH THAT ROD AND LINE.
I'LL NEVER COME BACK
PROFITS
DOMESTIC ENGINEERING

What Kind of Tackle Do You Use, Neighbor?

Getting fish on the hook isn't fishing. It's only fooling. Even a novice can get a bite. It's landing them that counts. We saw a man last week who did $133,000 worth of business in 1910 and was $11,000 in the hole. What kind of tackle did he use? Better overhaul your business fishing gear. It takes good tackle to land a Profit-Fish.

17TH ANNUAL MEETING OF THE CENTRAL SUPPLY ASSOCIATION, HELD AT CHICAGO, OCTOBER 25, 1911.

At the seventeenth annual meeting of the Central Supply Association, held at the Hotel Sherman, Chicago, on October 25th, the regular business was transacted; also a revision was made of the constitution and by-laws.

The following officers and executive committee were elected for the year 1911-1912:

President, William Ivy, Monument Plumbing Supply Co., St. Louis, Mo.

First vice-president, P. J. Frey, Central Supply Co., Minneapolis, Minn.

Second vice-president, C. V. Kellogg, Kellogg-Mackay Co., Chicago.

Treasurer, Edw. F. Niedecken, Hoffman & Billings Mfg. Co., Milwaukee, Wis.

Secretary, Paul Blatchford, 1524 Tribune Bldg., Chicago.

William Ivy, St. Louis, Mo.
The New President of the Central Supply Association.

Executive Committee: William Ivy, St. Louis, Mo.; P. J. Frey, Minneapolis, Minn.; C. V. Kellogg, Chicago; Edw. F. Niedecken, Milwaukee, Wis.; George H. Gorton, W. B. Young Supply Co., Kansas City, Mo.; Fred Wernentin, jr., Midland Supply Co., Davenport, Ia.; A. A. Merkel, Merkel Bros. Co., Cincinnati, O.; J. B. Rahm, United States Supply Co., Omaha, Neb.; C. A. Carothers, Standard Mfg. Co., Cleveland, O.

National Committee: Members—J. J. Ryan, W. A. Myler, John F. Wolff, F. D. Keeler, John L. Sullwold. Alternates—A. B. Pierce, M. J. O'Fallon, H. M. Hoelscher, A. A. Merkel, A. Y. McDonald.

The following were elected to membership in the association: The Goulds Mfg. Co., Chicago; American Wood Work Mfg. Co., Evansville, Ind.

Upon the call of the roll the following members registered as present:

I. E. May, May Supply Co., Anderson, Ind.

G. W. Baxter, General Supply Co., Atlanta, Ga.

L. B. Jenks and C. L. Selkregg, Pittsburgh Valve & Fittings Co., Barberton, O.

B. C. Van Leer, The Keiser-Van Leer Co., Bloomington, Ill.

Charles W. Badger and W. B. Neal, Hammond-Byrd Iron Co., Birmingham, Ala.

George P. Stannard, S. Jacobson, C. W. Newell, and C. Roy McCanna, Burlington Brass Works, Burlington, Wis.

George E. Downs Novelty Iron Co., Canton, O.

M. H. Allman, M. H. Allman Co., Chicago.

E. S. Seeley, Dearborn Brass Co., Cedar Rapids, Ia.

F. H. Caldwell and J. W. Garden, Cahill Iron Works, Chattanooga, Tenn.

R. R. Rabe, The Casey-Hedges Co., Chattanooga, Tenn.

L. Wolff, jr., John F. Wolff and Herman Hoelschet, L. Wolff, Mfg. Co., Chicago.

Wm. A. Rateliffe, L. W. Crane and C. C. Stringer, Republic Mfg. Co., Chicago.

J. J. Ryan, J. J. Ryan & Co., Chicago.

John D. Hibbard, Chicago.

Higgins Co., Chicago.

W. W. Orrison and L. R. Phillips, National Tube Co., Chicago.

I. Weil, Weil Bros., Chicago.

Chas. H. Foster American Radiator Co., Chicago.

Robert Bruce, LaBelle Iron Works, Chicago.

L. C. Huckins, The Kelly & Jones Co., Chicago.

Chas. A. Ford, Whitney & Ford, Chicago.

R. P. Zint, Republic Iron & Steel Co., Chicago.

E. C. Garrity, National Plumbing & Htg. Sup. Co., Chicago.

E. Buehler, Davis Supply Co., Chicago.

C. C. Todd, Central Fdry. Co., Chicago.

John T. Tyne, Western Plumbing Sup. Co., Chicago.

W. T. Cotter and L. D. Little, Crane Co., Chicago.

O. F. Kropf, Findeisen & Kropf Mfg. Co., Chicago.

A. F. Johnson, Federal-Huber Co., Chicago.

James Weir, Weir & Craig Mfg. Co., Chicago.

S. Deschauer and Otto J. Deschauer, S. Deschauer, Chicago.

A. A. Ainsworth, Chicago.

John A. Noone, Standard San. Mfg. Co., Chicago.

C. D. Street and Wm. B. Dale, Street & Kent Mfg. Co., Chicago.

W. B. Henion, Henion & Hubbell, Chicago.

W. H. Symonds, W. D. Allen Mfg. Co., Chicago.

C. N. Kellogg, Kellogg-Mackay Co., Chicago.

C. Miller Marcellus, C. N. Marcellus Co., Chicago.

J. R. Steneck and E. M. Marshall, Ill. Malleable Iron Co., Chicago.

J. C. Clow and Kent S. Clow, J. B. Clow & Sons, Chicago.

E. W. Sedgwick, H. M. Sedgwick and J. A. Hawkins, S. Wilks Mfg. Co., Chicago.

W. H. Bruce, Frank F. Corby C. W. Laren and J. S. Dibley, Mark Mfg. Co., Chicago.

Charles Pfau, The Pfau Mfg. Co., Cincinnati.

D. T. Williams, The D. T. Williams Valve Co., Cincinnati.

Louis J. Merkel, The Merkel Bros. Co., Cincinnati.

C. A. Carothers, Standard Mfg. Co., Pittsburgh, Cleveland and Toledo, O.

Irving G. Dimond, The Sanitary Co., Cleveland, O.

The Ascher Supply Co., Columbus, O.

Fred Wernentin, jr., Midland Plumbing Supply Co., Davenport, Ia.

McCormick Mfg. Co., Dayton, O.

Charles L. Janning, The Dayton Sup. Co., Dayton, O.

M. J. O'Fallon, The M. J. O'Fallon Sup. Co., Denver.

The Hedges-Atkins-McGee Co., Denver.

B. Waldt, L. H. Kurtz Co., Des Moines, Ia.

Edward E. McNair, U. S. Radiator Corporation, Detroit.

R. R. Sterling, Sterling & Skinner Mfg. Co., Detroit.

A. D. Manufacturing Co., Detroit.
Kimball-Eisenberg Co., Detroit.
O. P. Begum, Detroit Boiler Wks., Detroit.
E. L. Uhl, F. M. Minninger and A. W. Fussey, Detroit Brass Wks., Detroit.
E. W. Stoddard, Detroit Range & Boiler Co., Detroit.
James M. Walker, Walker Mfg. & Supply Co., Detroit.
D. B. Lee, Diamond Mfg. Co., Detroit.
A. Y. McDonald, A. Y. McDonald Mfg. Co., Dubuque, Ia.
Fred N. Kretschmer, Kretschmer Mfg. Co., Dubuque, Ia.
John S. Hopkins, Never-Split Seat Co., Evansville, Ind.
E. I. Leighton, Leighton Supply Co., Fort Dodge, Ia.
E. W. Puckett, P. & H. Supply Co., Ft. Wayne, Ind.
Wm. Heap, Wm. Heap & Sons, Grand Haven, Mich.
Ferguson Supply Co., Grand Rapids, Mich.
E. J. Henrichs, Grand Rapids Supply Co., Grand Rapids, Mich.
George F. Taylor, The Ross Supply Co., Greenville, O.
Alfred Grove, The Kelly & Jones Co., Greensburg, Pa.
Julian G. Smith, The Sanitary Supply Co., Hamilton, O.
C. E. Thompson and George A. Lutz, Thompson Mfg. Co., Holland, Mich.
J. Gilchrist, Indiana Supply Co., Indianapolis, Ind.
S. A. Quinn, Quinn Mfg. Co., Kalamazoo, Mich.
Carl H. Zwerman, The Enameled Tank Co., Kalamazoo, Mich.
J. A. Leggett, U. S. Radiator Cor., Kansas City, Mo.
George H. Gorton, W. B. Young Supply Co., Kansas City, Mo.
Hoyle Jones, LaBelle Iron Wks., Kansas City, Mo.
Kansas City Pump Co., Kansas City, Mo.
W. J. Frost, Frost Mfg. Co., Kenosha, Wis.
Geo. A. Harper, Central Closet Mfg. Co., Kokomo, Ind.
E. Willard and A. Y. Conradt, Great Western Pottery Co., Kokomo, Ind.
F. H. Knapp, A. H. Busch Co., Los Angeles, Cal.
Theo. Ahrens, Stand. San. Mfg. Co., Louisville, Ky.
Samuel Moon, The Ahrens & Ott Mfg. Co., Louisville, Ky.
T. R. Barnes, The Barnes Mfg. Co., Mansfield, O.
F. F. Borchard, The Humphreys Co., Mansfield, O.
W. J. Cram and J. H. Becker, Becker Mill Co., Marietta, O.
The Emerson Supply Co., Menominee, Mich.
E. F. Niedecken, Hoffman & Billings Mfg. Co., Milwaukee.
Aug. L. Seelman, B. Hoffman Mfg. Co., Milwaukee.
E. R. Spence and E. Webster, Rundle-Spence Mfg. Co., Milwaukee.
Wm. Schrubb, Wis. Plbg. & H. S. Co., Milwaukee.
George E. Slater, Republic Iron & Steel Co., Milwaukee.
Robert Rom, The Robt. Rom. Co., Milwaukee.
P. J. Frey, Minneapolis Central Supply Co., Minneapolis.
F. E. Reid, Reid Supply Co., Minneapolis.
George Keiser & Co., Muncie, Ind.
C. C. Hale, The Peck Bros. & Co., New Haven, Conn.
Manion & Co., New Orleans, La.
W. A. Cawley, B. O. Tilden and W. B. Maddock, American Sanitary Works, New York City.
E. V. Brigham and George M. Snyder, Union San. Mfg. Co., Noblesville, Ind.
F. R. Bishop, U. S. Radiator Cor., Omaha.
J. B. Rahm, U. S. Supply Co., Omaha.
Warren Kinsey, Kinsey & Mahler Co., Peoria, Ill.
F. W. Peters, Wm. B. Scaife & Sons Co., Pittsburgh.
W. B. Bryar, Bailey-Farrell Mfg. Co., Pittsburgh.
C. F. Meyer, Iron City San. Mfg. Co., Pittsburgh.
A. H. Cline, jr., and John J. Pluth, U. S. Sanitary Mfg. Co., Pittsburgh.
Boyd Watson and W. M. Thompson, Spang, Chalfant & Co., Pittsburgh.
Francis J. Torrance, Standard San. Mfg., Pittsburgh.
F. A. Ruhlman, Standard Sup. Co., Portsmouth, O.
Geo. F. Fischer, Modern Iron Works, Quincy, Ill.
F. D. Keller, Rockford Brass Wks., Rockford, Ill.
The Jos. Nelson Sup. Co., Salt Lake City, Utah.
W. C. Ehrhardt, John C. Kupferle Fdy. Co., St. Louis.
L. D. Lawnin and A. B. Pierce, N. O. Nelson Mfg. Co., St. Louis.
E. A. Downey and H. P. Nelson, National Tube Co., St. Louis.
Wm. Ivy, Monument Plumbing Sup. Co., St. Louis.
J. J. Horrigan, Horrigan Supply Co., St. Joseph, Mo.
Q. J. Frey, Union Brass & Metal Mfg. Co., St. Paul, Minn.
The Western Supply Co., St. Paul, Minn.
C. Kellogg, Higgins Co., San Antonio, Tex.
A. Fowle, Cal. Steam & Plumbing Sup., San Francisco, Cal.
A. W. Clement and Fred W. Smith, Shirley Radiator & Fdy. Co., Shirley, Ind.
J. B. Murphy, J. M. Kohler Sons Co., Sheboyan, Wis.
Chas. D. Symms, Plumbing Supply Co., Sioux Falls, So. Dak.
W. E. Watson, LaBelle Iron Wks., Steubenville, O.
Harry Verbeek, Miller-Hubbard Mfg. Co., Sturgis, Mich.
G. C. Kelbfleisch, Great Western Pottery Co., Tiffin, O.
F. Collins, Nat. Supply Co., Toledo, O.
F. W. Terwilliger and H. A. Schlingman, American Plumbers' Supply Co., Toledo, O.
J. C. Teague, Honeywell Heating Spec. Co., Wabash, Ind.
C. S. Johnson, The Northern Brass Mfg. Co., Waukegan, Ill.
A. S. Frampton, John Duncan and C. R. Elliott, Wheeling Steel & Iron Co., Wheeling, W. Va.
F. W. Wheelock, Wheeling San. Mfg. Co., Wheeling, W. Va.
Trimble & Lutz Sup. Co., Wheeling, W. Va.
W. E. Manning, The Youngstown Sheet & Tube Co., Youngstown, O.

Notes.

Frank S. Moore, representing the Globe Paper Co., Evansville, Ind., proved to be a good lobbyist during the meeting of the Central Supply Association, being successful in interesting manufacturers of seats and similar wooden-wares in his special packing-carton.

J. H. McDonald, of the McDonald Vacuum & Vapor Specialty Co., Cleveland, O., held a number of group meetings at the Hotel Sherman during the convention of the Central Supply Association, and every now and then the McDonald heating-principles would crop up in the discussion; not that he meant to let them escape but he is an enthusiast and has surplus energy, which is bound to find vent somewhere.

The Great Western Pottery Co., Kokomo, Ind., had a pleasing exhibit at the Hotel Sherman during the Central Supply Association meeting composed of 15 combinations. These included 4 "Expulso," 1 "Ejecto," 3 "Devors," 2 "Integral-Vents," 8 "Waveline," 1 seat-operating, 1 Government low-down, and 1 "Junior." Three "Brussels" tanks were also shown. The exhibit was capably engineered by A. B. Conrad and E. Willard, who distributed to all inquirers the company's booklets on the subject of ventilation, inside "Expulso" information, and the company's vitreous-china tanks.

The Parrott Heater Sales Co., Dayton, O., made a most interesting exhibit in one of the rooms of the Hotel Sherman for the benefit of the members of the Central Supply Association interested in heating apparatus. Several installations of Parrott heaters were shown, one of them in operation. George F. Deal and Karl E. Deal were the exponents and operators of the heating devices. Every Parrott inquirer was supplied with a leaflet of remembrance outlining the essential points of heater-excellence.

MANUFACTURERS OF PLUMBERS' WOODWORK MEET IN CHICAGO.

The Woodwork Social Club held its second meeting at the Hotel Sherman, Chicago, on Tuesday, October 24th. The meeting was well attended, about 75 per cent of the output of the country being represented. The unanimous opinion of those present was that the low-water mark in prices has reached its limit.

CONSOLIDATED ENGINEERING CO. ERECTING OFFICE AND FACTORY BUILDING.

The Consolidated Engineering Co. is erecting a factory and office building at 40th street and Michigan terrace, Chicago. This building will be a two-story fireproof structure, 85x135 ft., and it is expected that it will be completed March 1, 1912.

PERSONAL MENTION.

F. J. Baker, president of the Geo. H. Tay Co., San Francisco, returned recently from a trip to Pittsburgh.

M. L. Kline, a prominent plumbing supply dealer of Portland, Ore., is making a visit to San Francisco.

A. H. Werner has just allied himself with the Detroit Brass Works, Detroit, Mich., and will represent them in the East.

E. S. Maurer, traveling in the Pacific Coast territory for the H. Mueller Mfg. Co., Decatur, Ill., has been calling on the San Francisco trade for the last week.

S. Moser, formerly connected with the United Brass Mfg. Co., Cleveland, O., is now with the Ajax Brass Co., of Detroit and will call on the trade in the middle West.

Henry Stein, the well-known manufacturers' agent, 48 Cliff St., New York, has taken the exclusive agency for the Allyne Brass Foundry Co., Detroit, and will represent it in the East.

D. A. Westbury, ex-president of the Indiana State Association of Master Plumbers, has recently joined the forces of the Ideal Mfg. Co., of Detroit, and will call on the plumbing trade in Illinois and Indiana.

Albert Ross, who for many years has represented the Ruud Water-Heater Co. in Columbus and central Ohio, has discontinued the sale of this heater and has taken the exclusive agency for Columbus, central and southern Ohio and eastern Indiana for the new model "Beler Gas Water-Heater." Mr. Ross will retain his old location at 346 N. High St.

Howard G. Vernon, representing the Dayton Pump & Mfg. Co., is spending a week at the plant at Dayton in order to familiarize himself with the new pumps now being turned out, which will be added to the present line. Mr. Vernon has offices and display-rooms at 215 W. Seventh St., Wilmington, Del.

S. B. Hunter has recently connected himself with the Canton Brass & Machine Co., Canton, O. He will have charge of the manufacturing end, and is now making arrangements for an increase of capacity. Mr. Hunter has been with Jas. B. Clow & Sons, Chicago, until his connection with the Canton company.

D. B. Whittingham will start in a few days on his initial trip among jobbers and manufacturers in the interests of the Canton Brass & Machine Co. This company specializes on ball-cocks, flush-valves, closet-hinges, and gages for water and expansion-tanks.

Adam Cole, who represented the Vale & Kimes Pump Co., of Dayton, O., for several years, has accepted a position with the Hoffman Heater Co., of Lorain, O., and began his new work on November 1st as traveling salesman in Ohio, West Virginia, and the eastern part of Indiana and Illinois. With Mr. Cole's broad acquaintance among the plumbing trade throughout this territory, he will doubtless make a brilliant showing with the Hoffman Heater Co.

AMERICAN HEATING ENGINEERS HONORED BY BRITISH INSTITUTION.

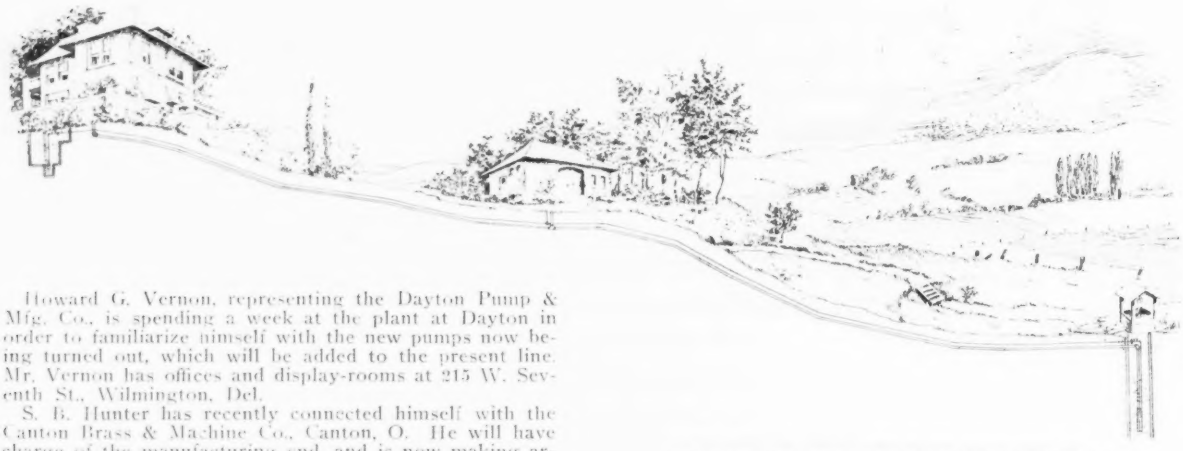
Two members of the American Society of Heating and Ventilating Engineers were elected members of the Institution of Heating and Ventilating Engineers of Great Britain at its meeting October 17th,—Thomas Morrin, San Francisco, Cal., and Nelson S. Thompson, Washington, D. C. C. C. R. Honiball, of Liverpool, Eng., another member of the American Society, has been nominated for the 1912 presidency of the British association.

PERRY AQUAPNEUMATICS.

A man had a house on a hill, a well some hundred feet below it and a garage nearly half-way between the two. Problem—establish a working connection between the three. The illustration shows how it was done by the United Pump & Power Co., Old Colony Bldg., Chicago, who installed for the purpose a Perry pneumatic water system. Hence our title "Perry Aquapneumatics."

This installation shows as sketched the basic advantages of a Perry system under those conditions, which are often to be found in practical duplication throughout the country. Further, the reader is able to grasp easily the principles applied to render the system efficiently operative. In the case under consideration, the air-compressing outfit was installed in the garage as the most convenient point, though it could have been placed at any part of the circuit with equal operative advantage and efficiency. The compressed air was piped to the well, in which was located the pneumatic pump. The water was forced by the air through the service-pipe to the garage and the house. A cistern, existing at the house, contained a supply of soft water which was made available by the installation of an extra pump operated by the same air-reservoir in the garage. In the sketch the single line represents the air-pipe and the double line the water service. This pipe may be tapped anywhere for water-sprinkling purposes. Another water-line runs from the cistern to the house.

The four cardinal features of the Perry Aquapneumatic



An Interesting Installation of the Perry Pneumatic Water System.

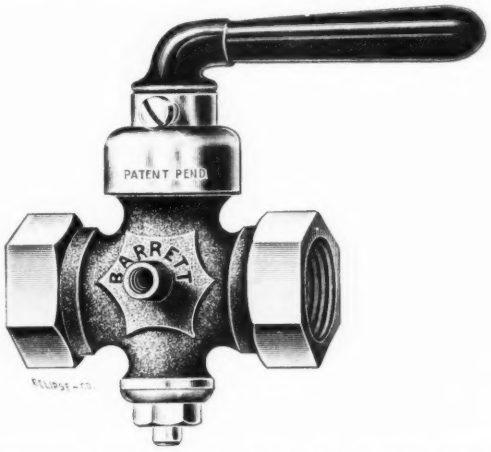
system are an air-compressing equipment, an air-pipe line, a pneumatic pump and a water-pipe line. In studying the installation, it must be clearly understood that no water is stored. It is all drawn as used from the source of supply, the manufacturers claiming exceptional freshness of water as the result.

Subsidiary portions of the installation are those of power and control. The power for air-compression can be obtained by hand (where limited water-service is required), by electric motor, gasoline engines or by belt from any existing form of power-installation. A pressure-reducer, a pump gage, a cut-off and a throttle-valve are the dominant controlling features.

The Perry pneumatic pump is the heart of the system. In its construction, it represents two small tanks, side by side, to each of which the air-pressure is applied alternately. While the air is forcing the water out of one tank, the other is re-filling with water by gravity. This twin pulsation provides an uninterrupted flow of water upon demand. The use of air in compression as a source of power gives great elasticity of installation. We have merely attempted a general description. Detailed descriptions, minute plans and comprehensive lay-outs are furnished by an interesting series of pamphlets and books which you can obtain upon request from the United Pump & Power Co., Chicago. Mention "Domestic Engineering" in your request.

THEY SPECIALIZE ON GROUND KEYWORK.

"Beware of the man of one book," said a writer a long time ago. He foresaw perhaps our present age of specialism. Up-to-date manufacturers, keeping pace with modern changes, have specialized in manufactured lines. Seventeen years ago, the Cleveland Bronze & Brass Works, Cleveland, O., commenced the making of high-grade brass goods and, in the evolution of commercial demand, has gradually confined its manufacturing efforts

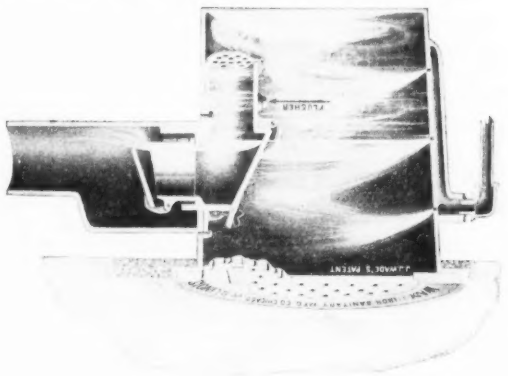


A Cleveland Bronze & Brass Works Stop and Waste Cock.

entirely to ground keywork. Perfectly-ground stops and wastes are now the paramount lines. The company issues folders, illustrating and describing its specialties. This literature can be had for the asking. In writing, mention "Domestic Engineering."

THE WADE DRAIN-FLUSHING APPARATUS.

The stoppage of a house-drain renders inoperative the entire sanitary system of a building. It is a menace to health, a creator of domestic disturbance and a forerunner of deadly disease. The Wade Iron Sanitary Mfg. Co., 43 East Harrison St., Chicago, offers as an efficient preventive of such stoppage an accessible clean-out floor wash



The Wade Drain-Flushing Apparatus.

and back-water valve gate combination as shown in the illustration. It is designed to fill an insistent demand for a floor-drain to be placed in floors of water-closet rooms, lavatories, wash-rooms, in toilet-rooms for public use and all other public conveniences where floors and walls are washed.

By the Wade method of flushing, the interior walls are thoroughly cleaned by the jets of pressure-water, which remove all slimy wastes as well as sediment from the bottom of the trap. The screw shown at the bottom outlet of the deep-seal trap prevents lint and solid matters from going into and clogging the waste-pipe. The apparatus may be secured with or without the gate-valve as desired. An interesting illustrated folder will be supplied upon request to the Wade Iron Sanitary Mfg. Co. When writing, mention "Domestic Engineering."

TRADE LITERATURE RECEIVED THIS WEEK.

The H. Mueller Mfg. Co., Decatur, Ill., sends out to interested people six important questions on lame service-boxes, 75 per cent of which will be answered by "yes." Then the Mueller folks get busy and point out to the reader how a hundred per cent of the questions can be answered "no." The secret of the change in answer is to be found in the Mueller repair-lid for service-boxes. You can read all about it your-self and see the illustrations of its construction by writing for the leaflet. It is a little business life-saver. Mention "Domestic Engineering" when writing, of course.

The Trenton Potteries Co., Trenton, N. J., has just launched into public notice a little work of art devoted to an illustrative exposition of its solid porcelain wash-tubs and sinks. The front-cover is in a pleasing bath-room-tile effect. The special point which should allure the housewife to favor the installation of the company's porcelain goods is the argument of their absolute non-scratchibility. This word is not in the dictionary, but every woman will seize upon it with avidity as something which should be in the next one. The kitchen-sink is generally a sink of despair when the materials of which it is composed are low-grade. The Trenton Potteries Co. maintains that the superiority of its porcelain goods will save hours of labor, and the goods themselves will maintain their immaculate whiteness throughout their service. Copy of this booklet, which contains a number of attractive illustrations of bath-room, kitchen and laundry wares, can be obtained upon request. Say that you saw it in "Domestic Engineering."

The 1911 Honeywell temperature-regulator is clearly illustrated and described in an eight-page folder just sent out by the Honeywell Heating Specialty Co., Wabash, Ind. The regulator in its 1911 form embodies several additional features of stability and mechanical ingenuity, and the most interesting portion of the folder is that part which gives three drawings showing how to connect the motor with a hot-water heater, a steam boiler and a gas-valve. The constructive illustration of the temperature-regulator motor is well worth studying. The folder can be obtained upon application by mentioning "Domestic Engineering."

The Century Sanitary Mfg. Co., Eastwood, N. Y., did not try to get out a catalog. They know something better than that. They have produced in booklet form what we would christen a Century tete-a-tete. Catalogs are like people, many of them very uninteresting, resembling more a picture-gallery of faces than possessing personal attributes. The Century booklet, in its wording and make-up, has a friendship-winning quality which compels attention and respect. Its opening paragraphs seem to say, "Come on, let's take a walk through the factory," and the walk is conducted from page to page until the finish. The principles underlying the manufacturing processes are set forth; the nature of the materials used in the manufacture of the company's sanitary woodwork and supplies are studied; the machinery used in their shaping and forming and their ingenious fitting together in durable form are explained. If the reader wants to enjoy a descriptive treat, he can with advantage send for this booklet on Century sanitary tanks, seats, flush-valves and other plumbing supplies. It is worth while. You can tell them that you became interested through this editorial notice in "Domestic Engineering."

Wells Bros. Co., Greenville, Mass., tells all about its screw-cutting tools and machinery in a catalog of 251 pages. We have to compliment the company on a departure in page-numbering which is a relief to the eye-sight. The page-numbers are set on the middle of the page on the outside column in bold type. Every one has been exasperated in endeavoring to decipher the microscopic and almost unintelligible figures at the top or bottom of the average catalog. Every type of tool and machinery for screw-cutting is described in detail. The

descriptions are brief but concise, and the illustrations are exceptionally clear. Copy of Catalog No. 30 can be obtained for the asking. Tell them "Domestic Engineering" told you about it.

The Walworth Mfg. Co. illustrates and describes its genuine Stillson wrench, which has been manufactured by the company for over 40 years. The strain on this type of wrench comes entirely on the upper and lower jaws and the nut, the frame serving to hold the parts together. As soon as the pressure on the handle is released, the jaw is thrown back by the springs. The wrench is made of the best tool-steel to a gage standard, and all parts are interchangeable. Copy of the booklet can be obtained by applying to the Walworth Mfg. Co. Mention "Domestic Engineering."

"The Powers System of Temperature Regulation" is the title of a new book put out by the Powers Regulator Co., 180 N. Dearborn St., Chicago. It shows care in construction. It is an interesting treatise on automatic heat-regulation which shows the widening scope and general use of apparatus built for that purpose. It is designed to foster an intelligent desire for an apparatus which will effectually do away with the uncertain daily conflict between heat and cold in modern homes and office-buildings, and provide a temperature which shall be equable under varying outside conditions. The economy, practicability and quality of temperature-control in the apparatus is considered, and a description of the Powers device as embodying all these essential features is interestingly presented. The Powers thermostatic disc, which is the heart of control in the Powers system, is made of two flexible bronze plates united at their edges, inside of which, hermetically sealed, is a liquid having a very low boiling-point. The volatilization of this liquid furnishes the operating power. With this disc as a basic principle the Powers thermostat is constructed and operated in connection with valves, motors, dampers, etc., which go to make up the complete system. Interesting plans are shown of various installations, and the work concludes with many photographs of the different types of structures at present being satsifactorily served by the Powers system of regulation. A copy of the booklet can be obtained upon application to the Power Regulator Co. Kindly mention that you read about it in "Domestic Engineering."

The Mackie Heater Co., 624 John Hancock Bldg., Boston, Mass., in its new pamphlet places before the trade its heaters for heating and purifying water for boilers and laundries. The heater in its construction has an outer shell and an inner tube-section. The efficiency of the heater obtains through the design of the latter. The tube-sheets at both ends of the tubes are entirely free from the shell, thus being free to expand and contract with the varying temperatures. The manufacturers claim that this eliminates liability to fracture of the tube-sheets, due to temperature-changes. There is a clearance space between the tube-sheet and the outer shell, which allows the exhaust-steam as well as the water of condensation to pass into the heater-base. The Mackie heater is also offered for the effective utilization of the exhaust-steam for hot-water service in hotels, laundries or institutions where a large quantity of water is required. The materials of which the heater is constructed are cast-iron and brass. A full illustrated description of the apparatus can be obtained upon request. Say you saw it in "Domestic Engineering."

The National Tube Co., Pittsburgh, Pa., in the September issue of the "N. T. C." bulletin considers in an interesting way the essential features of pipe-threading dies. Each point in their construction is taken up separately—the lip, chip-space, the clearance, the lead, and the quantity of chasers. Those interested in pipe-threading matters can obtain interesting information by a reading of this bulletin. When applying to the National Tube Co. for a copy of it, which can be obtained freea, mention "Domestic Engineering."

The L. E. Knott Apparatus Co., 16 Harcourt St., Boston, Mass., is going the right way about it to get plumbers interested in the installation of drinking-fountains. The new 4-page folder issued by the concern is unique in its method of presentation of the Keith Boston bubbler. The man who prepared the material for it knew his business. No time is wasted in telling fairy stories about the fountain. It is introduced by effective illustrations showing its internal and external construction. Then the method of its application is shown by four illustrated suggestions for plumbers. These suggestions show how the Keith bubblers have been installed in different ways, and should prove of great assistance to those in the trade who endeavor to install their apparatus to best advantage under varying conditions. The folder is well worth studying, and can be obtained from the L. E. Knott Apparatus Co.

ILLINOIS CHAPTER MEETS ON NOVEMBER 6th.

The next meeting of the Illinois Chapter of the American Society of Heating and Ventilating Engineers will be held on November 6th, at Vogelsang's restaurant, Madison St., Chicago. It was intended to devote the evening to a discussion of the various hot-water auxiliary appliances. This, however, has been deferred till the December meeting and in its place, August Kehm will deliver an illustrated lecture on some interesting heating and ventilating installations observed by him in Germany. This will prove a great treat, as Mr. Kehm is an enthusiast in heating matters and has a quiet descriptive facility of expression which lends added force and charm to his subject-matter.

NEWS FROM OHIO.

Bryan.—The voters will be called November 7 to decide on the proposition of issuing bonds in the amount of $50,000 to erect a sewage-disposal plant.

East Liverpool.—The voters will decide November 7 on the proposition of issuing bonds in the sum of $150,000 for the extension of the water-works system, which is inadequate to the present needs of the city.

Wauseon.—Plans are being prepared by the county commissioners of Fulton county for a new heating system for the court-house which will cost in the neighborhood of $5,000. A sanitary system will also be installed.

Canton, O.—Official notice that the state board of health has approved of the site for the proposed sewage disposal plant has been given by that body. The site selected is south of the city, although the exact location has not been made public. The city council has been asked to authorize the purchase of this site.

Cleveland, O.—The relation of sewage disposal to both the water-supply of the city and to the quality of the lake water at bathing beaches near the main sewer outlet, is to be investigated and reported upon by R. Winthrop Pratt, who has recently resigned as chief engineer of the Ohio State Board of Health in order to take up this work. Recommendations for obtaining a pure water-supply for the city and at the beaches will be made.

THE ANNUAL BALL OF THE CHICAGO NORTH AND WEST SIDE MASTER PLUMBERS' PLEASURE CLUB.

Invitations have just been issued to the annual reception and ball of the North and West Side Master Plumbers' Pleasure Club, which will take place at the Northwest Hall, on West North avenue, near North Western avenue, Chicago, on Wednesday evening, November 22nd. The grand entree is scheduled to take place at 9 o'clock. Arrangements are being made to make the affair as pleasant and enjoyable as all the former events of this excellent organization have been, and it is a foregone conclusion that it will be a splendid success.

"Never Touched Him."

"They're telling this story down in York State," said a traveler. "Rafferty was a conductor on an electric car. The superintendent caught him 'knocking down' fares and warned him to stop it. Rafferty kept on and was finally discharged. He brooded over his dismissal for a day or two and then loaded up on cheap whisky and started out to do up the superintendent. Rafferty found him in the car barn and began to complain that he had been unjustly discharged. One word led to another and pretty soon there was a fight. Rafferty ended it by drawing a revolver and shooting the superintendent. He was arrested for murder, tried, convicted and sentenced to electrocution. They took him to Sing Sing, sat him in the electric chair and turned on the current. It had no effect on him."

"Why?" asked the listener.

"Because Rafferty was a bad-conductor."

NEW ENGLAND NOTES.

Massachusetts.

Cambridge.—One of the busiest men in Cambridge at the present time is J. M. Naugle, who does a plumbing, heating and ventilating business and has his headquarters at 1986 Massachusetts Ave. Among the contracts in hand at the present time are the following: Plumbing in a six-apartment house at 10 Bowdoin St. for Z. Hayden; plumbing in a three-apartment house on Roseland St. for John L. Malcolm; plumbing and heating in three three-apartment houses on Prentiss St. for D. Harrold; plumbing and heating in the residence of J. E. Clapp on Bellevue Ave.; plumbing in the new residence of Dr. C. Brown; plumbing and heating in two houses in Arlington for Henderson Bros.; and plumbing in a residence on Westwood road, Somerville, for Mrs. W. B. James. Mr. Naugle has just completed the installation of a combination hot-water and hot-air heating system in Howard F. Peck's residence at 54 Hammond St., and plumbing, heating and gas-fitting work in a new restaurant at 1310 Massachusetts Ave.

Malden.—Alonzo A. West, one of Malden's leading business men, who conducts a large plumbing establishment, was married a few days ago to Miss Georgianna Barnet Wylie, daughter of Mrs. Jessie Wylie of Kinghorn, Scotland. The young lady came all the way from Scotland to be married. The wedding was the culmination of a romance which began a few years ago when Mr. West visited Scotland for the purpose of looking up some of his ancestors. His bride is an expert golf player and was secretary of the Kinghorn Golf Club.

North Brookfield.—Willard B. Wilson has the contract for installing a new heating plant in the Star Theater and is now engaged in the work.

Ipswich.—The contract for installing a new heating plant in the house of Hose 2 at Lord's Square has been placed with C. L. Stevens, who was the lowest of several bidders.

Whitinsville.—C. S. Sanborn of Boston has the contract for installing the heating system in the new public library building.

Boston.—The Cleghorn Co. has the contract for heating and ventilating a 10-story office-building which is being erected at the corner of Devonshire street and Spring Lane. The first two floors will be occupied by the Second National Bank.

Clinton.—The Metropolitan office-building, so called, is being remodeled into tenements. Maitland & Son have the contract for plumbing in connection with the alterations.

Watertown.—The contracts for plumbing and heating the new fire-station have been awarded, the former to Charles M. Hewitt and the latter to the Walker & Pratt Mfg. Co.

Northampton.—Albert Hebert, who was formerly a member of the plumbing firm of O'Connor, Hebert & Davis, is soon to remove to Syracuse, N. Y., where he will enter the plumbing business again.

Whitinsville.—C. H. Sanborn of Boston is installing the steam-heating plant in the new public library building, which is now in process of construction.

North Easton.—M. F. Burke has been awarded the contract to install a new hot-water heating plant in the Curry block on Washington street.

Newburyport.—The contract for the extension of the heating plant in the high-school building has been awarded to Frank Davis. The work will be started at once.

Brockton.—The sub-contract for the plumbing of the new Carnegie library building has been awarded to James T. Corcoran for $1,545. The heating and ventilating contract has been placed with Albert B. Franklin of Boston, the contract price being $4,400.

Holyoke.—The threatened strike of plumbers because of difficulties with two local master plumbers has been safely averted and conditions arranged satisfactorily to the union.

Connecticut.

Winsted.—F. W. Marsh & Son have been given the contract for the plumbing and heating of a three-family house which is to be erected on Main street for Miss Nellie Donovan.

Waterbury.—The Charles Thatcher Co. has the contract for the plumbing and heating for Mrs. George H. Clowes' new residence on Randolph avenue.

South Norwalk.—Stephen T. Wood's home in East avenue is being connected with the sewer and modern plumbing installed, the work being done by J. W. Buttery of Springvale.

New Haven.—Mayor Frank J. Rice has appointed Daniel M. Sheehan plumbing inspector in the building department and John D. Eldridge sub-inspector. They have both been city plumbing inspectors for some time, the reappointment being due to the fact that the legislature changed them from the health to the building department.

New Haven.—Thomas W. Corbett, the plumber, who has been critically ill at his home in Whalley avenue for several weeks, is much improved and is believed to be on the road to recovery.

Waterbury.—J. Devine & Sons have the contract for installing hot-water heating systems in John B. Duhaime's house on East Farm street and in Hans Rasmussen's house on Town plot. The same firm has just completed the heating of Miles Mehegan's house on Windsor street, William Palmer's house in Waterville, plumbing and heating in Mrs. Edna Santanna's new house on South Main street and in William Weymer's house in Waterville, and plumbing in Henry Grosenbach's house on Edson avenue.

Bridgeport.—The sub-contract for plumbing in the new Baird Machine Co's. plant has been placed with the W. P. Kirk Co. The steam-heating will be done by F. and F. C. Booth.

Bridgeport.—A. E. Roberts has the contract for heating and plumbing in the new house which is being erected on East avenue for J. F. Shay.

New Britain.—The contract for the plumbing work in the new Turner Hall building will be put in by George Rapelye.

Maine.

Sanford.—Bids for the heating and plumbing of the new fire station were opened a few days ago and the plumbing contract awarded to N. J. Prescott. The heating contract went to E. D. Bennett.

Bangor.—A new plumbing ordinance is being considered by the city council. The ordinance contains 12 sections.

Farmington.—Archie E. Roderick is having his plumbing shop moved a short distance and placed on a new foundation.

New Hampshire.

Whitefield.—The Kier Bros. have installed a new heating plant in the residence of F. W. Page and are now engaged in installing a similar plant in the residence of F. A. Stevens.

Manchester.—The contract for heating and plumbing in the convenience station in Merrimack Common has been awarded to John H. Stevens for $4,111.

Vermont.

Burlington.—Fred L. Underhill, a local plumber and heater, died suddenly a few days ago. Mr. Underhill was 47 years of age and a native of New Hampshire.

Morrisville.—M. B. Eaton & Son have the contract for plumbing in nine new houses which are now in process of construction on Wabun avenue.

Rutland.—The firm of Connolly & Loveland, who have conducted a plumbing and stove establishment on Wales street for a number of years, has been dissolved. Mr.

Loveland being the retiring partner. Merritt C. Davis has been named by the court to settle the business, the partners having been unable to agree upon the value of the property, Davis was appointed by the local court on petition of Mr. Connolly.

Rhode Island.

East Providence.—The contract for plumbing in the new Riverside and Rumford grammar school buildings has been awarded to the Samuel Jackson Co., of Pawtucket, for $3,194.

Pascoag.—J. H. Smith has been awarded the contract for installing steam heating in the Odd Fellows building. The plant will be called upon to heat three stores, the main hall and lodge rooms.

Providence.—John Shanley, who has been engaged in the plumbing business for 20 years, has been nominated for ward councilman from the 10th ward. His nomination practically assures him the election. He is a former president of the master plumbers' association. He will run on the Democratic ticket.

PITTSBURGH NEWS.

Contracts of rather small size seemed to rule in the Pittsburgh district during the last fortnight, although considerable importance has been attached to the work to be done on the new Harris Theater in Diamond street. The contract for the steam-heating and ventilating in this improvement has been awarded to the Bartley-Kennedy Co., and it will be enabled to get busy on this work ere many weeks roll by.

There appears to be an air of activity about the general offices of the Reliance Heating Co., and of late some reasonable contracts have been secured by this concern. One of the best residence contracts secured by the Reliance people is the $20,000 residence being erected by John Lorsch in Aspinwall, and the hot-water system in the new home of J. Davidson. Heating in the $10,000 residence of George R. Reithmiller at Aspinwall has also been given to this company.

Plumbing in a new apartment-building being erected by Mrs. Anna Donaldson has been awarded to the Knoxville Plumbing Co.

The Hallett Plumbing Co. has just been awarded the plumbing in twelve residences which are being erected by Ebenezer Hallett and Lydall Halley.

Other heating and plumbing contracts just awarded plumbers and heating engineers in the Pittsburgh district are as follows:

Johnstown.—Cambria Plumbing & Heating Co., heating work in L. A. Wakefield residence.

East Pittsburgh.—Carson-White Co., Northside, Pittsburgh, plumbing in new addition to machine shops for Westinghouse Electric & Manufacturing Co.

Oakmont.—G. C. Evans, who is erecting three residences, has awarded the contract for the plumbing work in the trio to Bert Blaine.

Mt. Oliver.—G. A. Jones, who has started to erect 10 dwellings, has given the plumbing work to Undercoffer & Jones of Pittsburgh. Work has been started.

Aspinwall.—Moss & Blakley, of Pittsburgh, have been awarded the plumbing work on the $10,000 dwelling of George Reithmiller, and also in two dwellings being erected by W. Kund, of Pittsburgh.

Ben Avon.—The trustees of the Ben Avon Country Club six miles south of Pittsburgh, have awarded plumbing in the new club-house to the Avalon Plumbing Co., of Avalon, Pa.

Beaver Falls.—Heating in the new high-school building has been secured by the Bartley-Kennedy Co.

Washington, D. C.—Joseph A. High has taken into partnership with him Mr. Bookhultz and Mr. Bauer, and the three will continue the plumbing, heating and gas fitting business under the firm name of the Bookhultz-Bauer Company, at 1026 Fairmont street, N. W. The new company would like to receive literature on plumbing goods.

Washington, D. C.—Another assistant inspector of plumbing has been appointed in the local plumbing department, the new incumbent being Frank Lockhead, who has been connected with the plumbing business for many years and is well known to the local trade.

RECENT CORPORATIONS.

Among incorporations recently reported are the following:

John Richman Plumbing Contracting Co., Bronx, New York City. The incorporators are John Richman, Joseph Lipkoff and Isidor Richman, all of New York, and the object is to do a general plumbing contracting business. The capital stock is announced as $10,000.

The Northwestern Plumbing Co., of Missoula, Mont., to carry on a general plumbing business. The capital stock is $10,000, and the incorporators and directors for the first three months are V. L. Bullis, R. H. Dunlap and O. B. S. Orr. This is not a new undertaking, business having been carried on for some time before this incorporation, under the management of Mr. Bullis. A fuel department, in charge of Mr. Dunlap, will now be added to the plumbing interests.

James F. Blackshaw Plumbing Co., Jersey City, N. J. The object is a general plumbing business, with a capital of $10,000, and the incorporators are: Jas. F. Blackshaw, Ann Blackshaw and Stephen J. Connelly.

The Royal Metal & Heating Co., Royal Oak, Mich., with a capital stock of $4,000.

Merrell Plumbing Co., Spartanburg, S. C. The incorporators are W. J. Merrell and S. G. Hawkins, and the intention is to do a general plumbing business. The capital stock is reported as $1,000.

TIPS FOR THE TRADE.

Heavener, Okla.—The Mizell Hardware Co., which started business here with $6,000 capital, is doing a plumbing business. Catalogs are requested.

Marinette, Wis.—The Watson Bros. Hardware Co. has just added a plumbing department, and will hereafter feature vacuum steam-heating and pneumatic water-supply systems.

Turlock, Cal.—A plumbing department has recently been added to the business of the Turlock Hardware Co.

Lompoc, Cal.—Catalogs of plumbing supplies are desired by J. F. Rudolph, who has recently bought out the plumbing business of Saunders & McAdam.

Dunkirk, N. Y.—Plumbing, gas and steam-fitting, and furnace work will be featured by the corporation of Alling & Fields Co., which was formed here with a capital stock of $21,000. D. W. Goldsmith is secretary-treasurer.

Baltimore, Md.—William K. Matheson has purchased the plumbing-supply business of Holland & Busky. He would like to receive catalogs from jobbers and manufacturers.

Beloit, Kans.—R. R. Freeman, for many years a resident of Denver, Colo., and a practical plumber and steam-fitter, has bought the controlling interest in the Kansas Hardware Co., of this place.

Ouray, Colo.—The Ouray Hardware Co. has been formed, with a capital stock of $20,000, to conduct a plumbing, steam and hot-water heating and ventilating business. Catalogs of plumbers' supplies are desired.

Metz, Mo.—C. C. Jennings has bought out the business of Frank Dye and will increase his plumbing business. He would like to receive catalogs of plumbers' supplies.

Benson, Ill.—Catalogs of plumbers' supplies are desired by R. J. Stephenson, who has bought out the hardware business here of H. E. Corbin.

BIDS WANTED FOR HEATING GOVERNMENT WIRELESS STATION AT ARLINGTON, VA.

Sealed proposals, indorsed "Proposals for hot-water heating system," will be received at the Bureau of Yards and Docks, Navy Department, Washington, D. C., until Nov. 11, 1911, for furnishing and installing, complete, a hot-water heating system in the wireless station buildings at Arlington, Va. Plans and specifications can be obtained on application to the bureau.

"The legislators who oppose laws compelling the pasteurization of milk," said Nathan Strauss, "bring forward arguments about as weak as that of the Maine milkman.

"A lady summering in Maine said to her milkman severely:

"'See here, this milk of yours is half water and half chalk. What do you mean by advertising it as pure?'

"'Madam,' said the milk manufacturer with withering dignity, 'to the pure all things are pure.'"—Everybody's.

PACIFIC COAST LETTER

San Francisco.

Plumbing and steam-heating contractors in San Francisco have been somewhat disappointed at the delay in the letting of large contracts of late. There has been plenty of work in prospect, but for various reasons work on some of the most attractive jobs has been held up. This week, however, the preliminary contracts have been placed for several large buildings, and it is pretty certain that the plumbing and heating contracts will be forthcoming very soon. If anything like all the work now in the hands of architects is placed during the coming winter, it will be the busiest season in several years. In regard to many buildings, it is noted that the plumbing is included under the general contract, and it is apparent that the trade is not strictly following the agreement made a year or more ago to accept work only from the owners. This, of course, was never regarded as an iron-clad rule, but from present appearances the trade seems to be drifting further and further away from it.

The matter of freight rates is receiving considerable attention at present, both from the local wholesalers and the owners of shops in the territory tributary to San Francisco. The matter of most interest just at present is a hearing before the State Railroad Commission on the proposed advance in rates between points in California on certain plumbing supplies, as provided for in the recent supplement to the Western Classification. An informal hearing of a preliminary nature was held on October 25th at which William R. Wheeler and Seth Mann of the traffic bureau of the Chamber of Commerce entered formal protest against the advance on behalf of the jobbers. Mr. Wheeler was formerly prominently connected with the plumbing supply trade, and is accordingly in a good position to look after its interests. The railroads were represented by Harry P. Anewalt, assistant general freight agent of the Santa Fe, and others, who argued in favor of the new classification.

The supplement to the Western Classification, which was recently adopted as a whole by the Interstate Commerce Commission, makes some slight changes in the rates on plumbing supplies in this territory, notably increasing those on light bath-tubs, though some rates are decreased. Representatives of the railroads maintain that they can handle heavy bath-tubs much more cheaply than those of light weight, and also hold that the advance made is compensated by reductions in other lines. No definite action was taken by the commission, but Mr. Wheeler's suggestion that the advance be suspended until a decision is rendered in the San Joaquin valley rate case was taken under consideration. The latter case has been pending for many months, and its decision may cause many radical changes in freight rates throughout the interior of the state, which would seriously affect the jobbing trade of San Francisco and other distributing centers.

The trade extension excursions of the San Francisco Chamber of Commerce, conducted during the last year, have been so successful that they have become an established institution. The last excursion of this kind, which has just been completed, lay through the towns of the "mother lode" mining district, and is considered the most successful event of the kind which has yet taken place. The plumbing supply trade was well represented. H. M. Holbrook, treasurer of the large house of Holbrook, Merrill & Stetson, said on his return: "I was agreeably surprised to find that, despite the aggressive competition of eastern manufacturers and jobbers, all of the San Francisco wholesale houses were well represented in the stocks of those whom we visited. San Francisco was for years the only possible market, and a certain loyalty to this city no doubt accounts for the faithfulness of the older merchants, but many of the younger merchants told us that after giving the eastern houses a chance to make good they are convinced that any advantages which the eastern concerns may offer are more than offset by the convenience of placing their orders nearer home. San Francisco houses cannot afford to overlook any opportunity to bind the outlying districts to us by just the touch of personal interest and good will which these excursions are designed to convey."

The master plumbers are co-operating with other building trades to promote the working out of a suitable amendment to the employers' liability law passed by the last legislature, which has already worked some hardships on employers, and is likely to be still more troublesome in future. W. S. Snook & Son have taken a number of important contracts of late. Locally, they will soon start work on the plumbing in the Bankers' Investment building on Market street near Geary, and on the new Masoic Temple, while a small contract for plumbing in a building at Van Ness avenue and Sutter streets was signed a few days ago. They also have the job in the Security Bank building in Oakland.

Among the large buildings for which foundation contracts, etc., have been let, are: The new St. Luke's Hospital at Army and Valencia streets, and the Standard Oil Co.'s large office-building. Plumbers are taking particular interest in the former job, which will require a fine lot of fixtures, as well as an up-to-date heating system. Another job for which the general contract has just been let is the medical library of the Stanford University, at Webster and Sacramento streets. Nothing definite has been heard regarding the new wing of the St. Francis Hotel, but it will be ready for figuring before long, and meanwhile inquiries are coming out on a large number of apartment-houses, some of which will be unusually large. Willis Polk & Co. have completed working drawings for the $500,000 Regent Hotel building on Sutter street, for which contracts will be let within the next month. A call for bids is expected at any time on the U. S. subtreasury building, which, like all Government buildings, will be well equipped from the sanitary point of view. Another important local job will be the Labor Temple, at Sixteenth and Capp streets, plans for which have been accepted.

Figures are being taken on a large building in Santa Clara county, Cal., to be used as a home by the order of Odd Fellows, which will cost about $125,000.

While comparatively little work is being done by the University of California at present, the Regents have decided to install a steam-heating plant in the zoological museum.

Installation and extension of waterworks systems is a prominent feature all over the Pacific Coast this season, and work in this line is certain to continue active through the coming year, as indicated by the numerous cities which are issuing bonds or in other ways raising funds for waterworks improvements. The town of Alturas, Cal., is taking figures on a complete water system, and contracts were recently placed by the town of Tracy. The U. S. Cast Iron Pipe & Foundry Co. at Alabama is shipping 8,000 tons of water pipe to San Diego in solid trainloads of 1,000 tons each, the third train having been dispatched about a week ago. The laying of pipe on the auxiliary water system of San Francisco has progressed very slowly. According to the original plans, the work was to have been completed nearly a year ago, but there is still a heavy tonnage of the pipe in the city's yards, and quite a lot of the pipe has not been shipped from the foundry.

Work on the new sewer system of San Francisco is steadily progressing, and will probably be completed in good time for the exposition in 1915. Some of the largest contracts on this work have been completed, and a number of new jobs have been let within the last few months. Other cities of the state are also putting considerable attention on sewer improvements. Oakland is now arranging to let new contracts for about 150 miles of new sewers in the annexed district, the former contracts, let last spring, having been canceled because of the invalidity of a bond issue. A large contract for sewer work was recently let at Coronado, Cal.

The Robert Dalziell, jr. Co., of this city and Oakland, has taken the contract for plumbing, heating and galvanized iron work in the new Pantages Theater building at Twelfth

and Franklin streets, Oakland. This company has just started work on the plumbing and heating systems of a four-story store and office building at the corner of Battery and Market streets in this city.

NEWS FROM SAN DIEGO, CAL.

No city on the Pacific Coast is as lively and has as much new construction under way as has San Diego with 40,000 people, according to the last census, and over $4,000,000 already in building permits for 1911. There is only one reason for this, according to San Diegans, and that is San Diego is the finest place to live in the whole United States, if not in the world. The real reason seems to lie in the plans San Diego has under way for the Panama-California Exposition, to be held during the entire year of 1915, work on which has already started in the huge 1,400-acre park in the center of the municipality. Actual construction will begin early in November on the Administration building, to be followed by construction on the California state building. Most of the structures at this exposition will be of reinforced concrete, stone and brick and will be permanent in character. Miles of pipe and a large amount of plumbing are to be installed, more in proportion than at any other exposition because of the determination of the San Diegans to make the horticultural and floricultural features paramount. If present intentions are carried out there will be one horticultural building that will surpass any effort ever made in the world of similar character.

Owing to the favorable climate it will be possible to keep this exposition open day and night during the whole year, and as the city is now assured of an ample and generous water supply, the flowers and trees will make up a wonderful exhibition. At the exposition nursery now are nearly 1,000,000 new plants under propagation for the expo-exposition, with many millions more to come.

In the city itself there is a building boom that is unprecedented in a city of the size of San Diego. Business has increased so fast that the bank clearings jumped 38 per cent in October. The building record is the highest in percentage of increase of any incorporated city in the United States. It is needless to say that every plumber and fitter in San Diego is busy and that a good many contracting firms from the outside are busy with work here.

The latest big down-town project is a hotel, the building permit for which amounts to $375,000, work on which is to begin at once. Two other large contracts are the government building and the new union depot.

The architecture of the exposition is to be Spanish Colonial and the work on the buildings is to be carried along until 1915, giving practically four years of work for the builders and contractors concerned with them. An average of $7,500,000 per annum will be spent in the city on work already planned or contracted for, counting in the exposition. This in a city rated at 40,000 is held to be a world's record.

The last census, that of 1910, is only a year old. The water department makes the statement that it is serving 55,000 people. As new arrivals are coming in at the rate of 1,000 a month, it looks as if the prospects for greater expansion of the city are brighter than ever. San Diego confidently believes that by January, 1915, she will have a population of 150,000.

The John Roberts Co., Los Angeles and San Diego, has been awarded the general contract at $359,000 for the erection of a six-story and basement reinforced concrete store and hotel building to be built at San Diego for John D. Spreckels and W. H. Hannam. The upper floors will contain 275 guest-rooms, about half of which will have private baths. There will be two public toilets and a public bath for men and two for women on each floor. Each room will have hot and cold water, steam-heat, telephone, vacuum-cleaning system, etc.

NEWS FROM LOS ANGELES, CAL.

The $19,000,000 mark has been passed in construction operations in Los Angeles during the present year. The exact figures are $19,097,690, against $17,170,220 for the corresponding period last year, or a gain of $1,927,470 in favor of 1911. Thus far during October there have been issued 898 permits for a total cost of $1,123,741, compared with 676 permits and $1,088,327 during the same period last October. Construction of apartment-houses represents the greater part of the cost, next to residences, of building work now under way in Los Angeles. From an investment standpoint the modern apartment-house in Los Angeles is most attractive.

A contract for installing the plumbing in the prospective skyscraper of the Los Angeles Investment Co., at Eighth street and Broadway, was let recently by Chief Architect Ernest McConnell to A. B. Marshall at a price said to have been $60,000. The contract calls for the employment of only the best skilled workmen and mechanics, and the work is to be of the most modern standard.

One of the Buildings Planned for the Panama-California Exposition.

The contract has been awarded to H. J. Myers for the erection of a three-story and basement brick apartment-house to be built at the southeast corner of Pico and Wright streets for Mrs. Etta Johnston.

Ground is now being broken for the 12-story building at Fourth and Hill streets, to be known as the Black building.

Architects Morgan, Walls and Morgan, 1114 Story Bldg., are taking bids on the general contract for the erection of the 11-story and basement building, to be erected at the southwest corner of Seventh and Spring streets for I. N. Van Nuys.

Architect S. Tilden Norton is preparing plans for a three-story and basement class A brick apartment-building, to be built on the north side of Sixth street between Hartford and Witmer streets, running through from Sixth to Fifth street, with double frontage, for W. M. Gottschalk and A. Sieroty. It will be 50x132, containing 66 rooms.

Architect A. S. Heineman has prepared plans for a three-story brick apartment-building, to be built at Ninth street west of Hoover and to be known as the Mode Apartments.

Architect Frank M. Tyler has completed plans for a four-story and basement brick apartment house 60x120, to be erected on Fremont avenue near Sixth street, for Dr. A. M. Pelton. Architect C. C. Rittenhouse is preparing plans of a three-story 95-room, frame apartment-building to be erected at 916 W. 10th St. for W. C. Elderton. LeClaire & Pitzer are preparing plans for a three-story, 64-room brick apartment-house, to be built on the south side of Maryland avenue, near Bixel street, for J. J. Vallik.

The Suburban Homes Co. is taking bids for the erection of a brick business at Owensmouth, in the San Fernando valley. T. Beverly Keim, jr., & Co. are preparing plans

for a two-story and basement brick building, 55x120, to be erected at the northeast corner of Eleventh and Olive streets, for Herbert Earlscliffe, of Santa Barbara. It will be occupied by the Diamond Rubber Co. W. C. Crawford, of St. Louis, will build a palatial residence in Wilshire Boulevard district, according to plans just completed by the Milwaukee Building Co. Brown & Co. will install 158 fixtures for Mr. Colgan at 1341 S. Flower St. Kroeger Bros. have been awarded contract to install 151 fixtures for Mr. Roberts at 1420 S. Flower St. and 40 fixtures for Mr. Raymond at 301 N. Figueroa St.

Selma, Cal.—S. H. Noble, of the plumbing firm of Noble & Hursh, has taken over the interest of his partner.

Alhambra, Cal.—The Rommall Plumbing Co. has taken the plumbing contract for a new school at $2,675, the heating and ventilating work going to the Machinery & Electric Co. at $1,529.

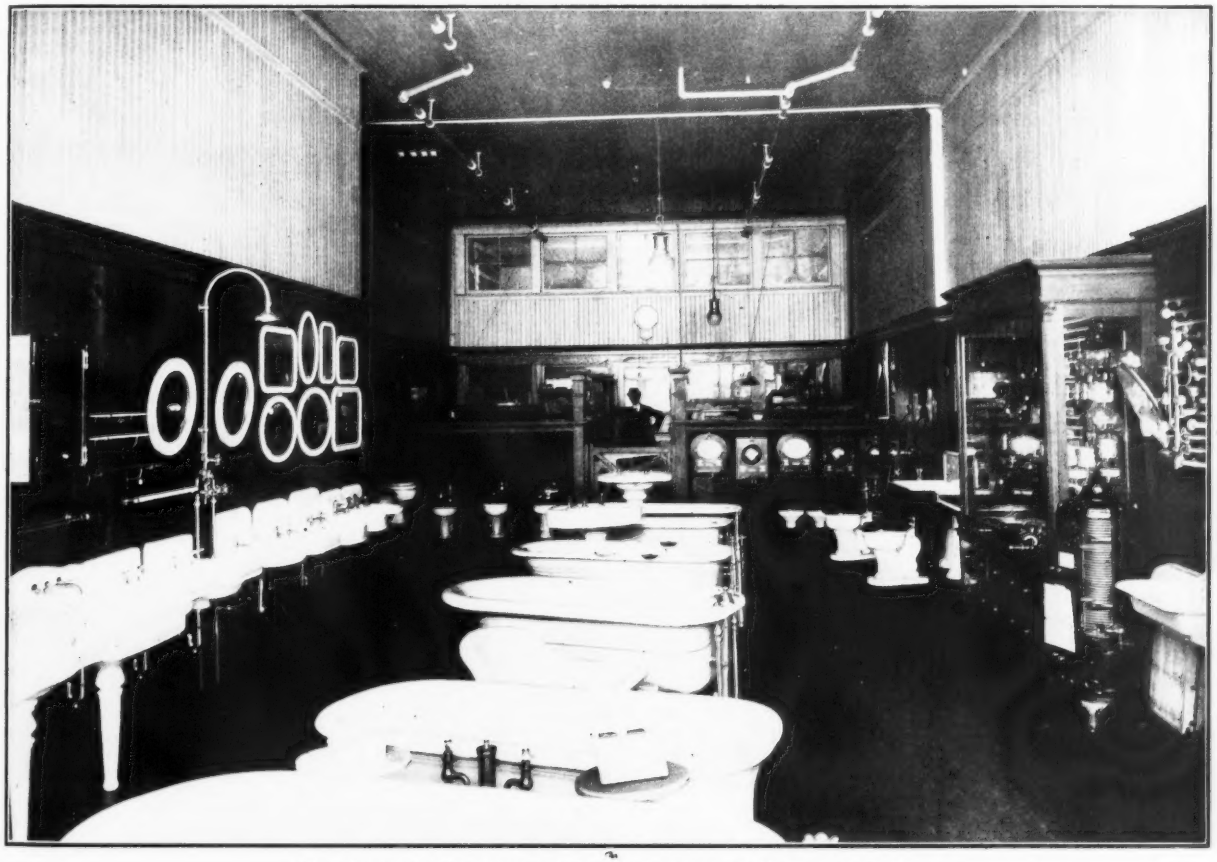
South Pasadena, Cal.—Chas. Farrell, who is planning to put up a row of houses, has asked permission to build a septic-tank to dispose of the sewage from all the houses, instead of using cesspools as required under the present rules. The matter has been referred to the sanitary committee of the town trustees.

San Rafael, Cal.—W. A. Downing has bought out the hardware and plumbing firm of R. E. Chapman & Co.

Portland, Ore.—The largest plumbing and heating contract let for some time past is that for the new wing of the Multnomah County court house, amounting to $20,727 for heating and $19,171 for plumbing. The job was taken by the McCusker Co.

A PROGRESSIVE VANCOUVER FIRM.

On February 1, 1898, Matthew J. Barr and Jesse G. Anderson, believing that "in union there is strength," formed a partnership under the firm name of Barr & Anderson. How well they have proved the truth of the old adage may be inferred from the fact that last year they employed nearly 200 men, and at the present time have about 150 on their pay-roll. The quality of their work and of the materials they furnish, is clearly indicated by the fact that last year their contracts amounted to $400,000, and at the present time they have in hand work approximating $150,000. We are glad to be able to show our readers the interior view of the Barr & Anderson store, with its attractive and comprehensive display of lavatories, bath-tubs, closet-combinations, and all the smaller articles needed to fit out a completely up-to-date modern bath-room.



The Handsome Show-Room of Barr & Anderson, at Vancouver, B. C.

His Choice.

"Yes," said the specialist as he stood at the bedside of the miser-millionaire, "I can cure you."

"What will it cost?" came feebly from the lips of the sick man.

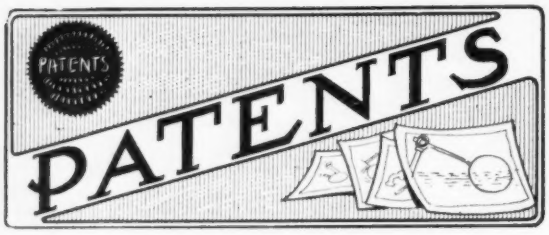
The specialist made a swift mental calculation and said "ninety-five dollars."

"Can't you shade that figure a little," wailed the sick man, "the undertaker's bid is much less."

In Praise of Eloquence.

An Alabama negro was defended in court by Senator Morgan. Having cleared the negro of the charge, the Senator said to him: "Rastus, did you really steal the mule?"

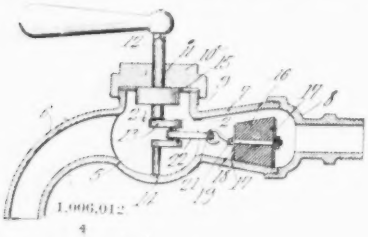
"Well, Marse Morgan, it was just like this," said Rastus: "I really thought I did steal dat mule, but after what you said to the jury I knows I didn't."—Success Magazine.



Plumbing Department.

1,006,012. Faucet. Andrew Skjelstad, Duluth, Minn. A faucet, including a casing having a tubular connection intermediate the water-pipe nipple and the faucet discharge-spout, said tubular connection being tapered in the direction of said discharge-spout, a tapered valve arranged to loosely move along the inclined surface of said tapered tubular connection, an actuating stem for said valve, and loosely-jointed link connections between said valve and said valve-actuating stem, whereby the valve is allowed to effectively close under low or high water-pressure.

1,006,024. Pipe or Tubing Wrench. John J. Tague, Bellton, W. Va. In a pipe-wrench, a handle, a flexible metal tongue having one end fixedly secured to said handle, a plurality of segmental toothed slips, inturned overlying flanges formed integral with said slips, said slips being slidably mounted on said tongue with said flanges in embracing engagement with the latter whereby they are supported both when the tongue is in operative and inoperative positions, said tongue being adapted to bend

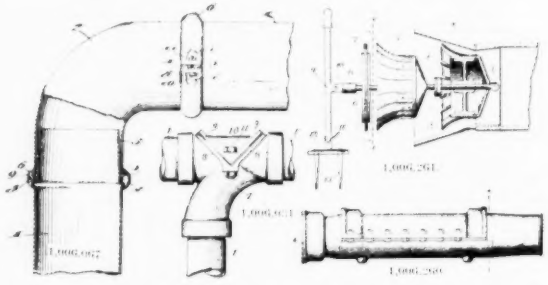


readily and thus to actuate said slips to conformably engage a pipe embraced thereby, means for holding said tongue in position about a pipe, and a spring-pressed pawl carried by the handle for interlocking engagement with a tooth of a slip when said handle is moved in a forward direction.

1,006,187. Automatic Water-Pipe Cleaner. Joseph Edward James Edmonds, Kalgoorlie, Western Australia, Australia. A pipe cleaner comprising in combination, an elongated body provided with longitudinally disposed brush receiving grooves arranged at an angle to its longitudinal axis, brushes anchored in said grooves and spaced apart from each other, a flexible disk disposed at the rear end of said body and projecting laterally beyond the same to engage the wall of the pipe, and propeller blades disposed rearwardly with respect to said disk and anchored to said body.

1,006,031. Pipe-Joint. Frank H. Weatherly, Grand Rapids, Mich. A pipe, provided with a removable portion in one side, flanges on the margin of said portion arranged in oppositely inclined planes and joined at their adjacent ends at an angle, opposing flanges on the pipe parallel with the flanges on the removable portion, a packing between the flanges and means for securing the removable portion in place.

1,006,067. Pipe-joint. Charles Diehl, Egg Harbor City, N. J. Two pipe sections, an annular bead formed on one section adjacent its end, an annular bead formed on the other section at a point appreciably removed from its end, and the end portion of said last mentioned section being reduced in diameter and inserted into the first mentioned section whereby the two beads are arranged in parallelism, and slightly spaced apart, a clamping ring around the sections inclosing both of said beads and engaging the same, said clamping ring being split and curved in cross section to receive said beads, an ear struck inwardly from said ring adjacent one end thereof, the ring adjacent the other end being transversely slit and the body of the ring on the side of the slit removed from the end being bent inwardly, a bolt extending through said slit and said ear, a head on said bolt having one side flattened and resting against said inwardly bent portion, and a nut on

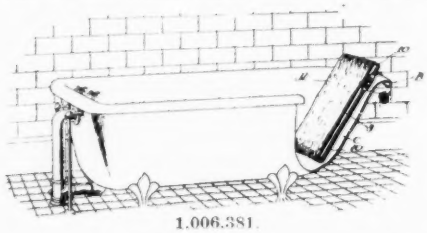


said bolt and bearing against said ear, substantially as described.

1,006,260. Pipe-fitting. Oscar B. Mueller, New Rochelle, N. Y., and Burt B. Hodgman, East Orange, N. J., assignors to National Water Main Cleaning Co., a corporation of Maine. In a pipe fitting, an opening therein, a cover for said opening so arranged that when said cover is in position the inner surface of the cover registers with the inner diameter of the fitting, the ends of said cover being bell-shaped and having within the bell-shaped portion a groove, and means for fixedly securing said cover in position.

1,006,261. Device for Inserting Pipe-Cleaning Machines into Pipe-Lines. Oscar B. Mueller, New Rochelle, N. Y., assignor to The National Water Main Cleaning Co., a corporation of Maine. In a device for inserting pipe-cleaning machines into a pipe, the combination of a fitting for contracting the diameter of the cleaning members of the cleaning machine gradually permitting the diameter of said cleaning members to enlarge, and means for forcing said machine into the pipe.

1,006,381. Bath Accessory. Frank Hess, Kalispell, Mont. A bath accessory, comprising an elongated frame to extend from the bottom to adjacent the rim of a bath tub; a removable towel covering for said frame; a plurality of loop members extended across the upper and lower end of said frame outside said towel covering to


1.006.381.

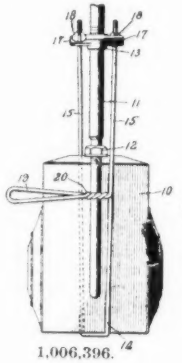
hold said covering between said loops and said frame; and means for moving said loops to clamp said cover.

1,006,396. Meter-Hanger. Philip Mueller and Anton C. Schuermann, Decatur, Ill., assignors to H. Mueller Manufacturing Co., Decatur, Ill., a corporation of Illinois. The combination with meter-connections, of a support carried thereby and positioned at a point above and spaced from the top plane of the meter, and a hanger adapted to embrace the side and bottom walls of the meter, and having its free ends each adjustably and independently secured to the support.

1,006,397. Meter-Hanger. Philip Mueller and Anton C. Schuermann, Decatur, Ill., assignors to H. Mueller Manufacturing Co., Decatur, Ill. a corporation of Illinois. The combination with meter-connections and the street or

service pipe to which the connections are secured, of means carried by the pipe and supported thereby at a point above and spaced from the top plane of a meter and movable longitudinally of the pipe for supporting the weight of the meter by suspension.

1,006,398. Meter-Hanger. Philip Mueller and Anton C. Schuermann, Decatur, Ill., assignors to H. Mueller Manufacturing Co., Decatur, Ill. a corporation of Illinois. A support comprising a hanger member in the form of a stirrup, said stirrup having its upper ends inclined inwardly and upwardly, each end having means for removable



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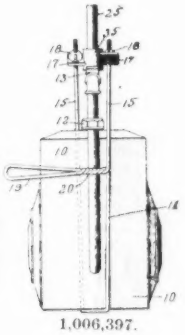

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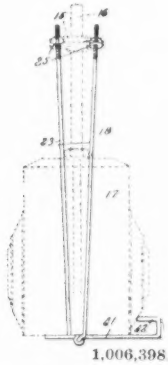
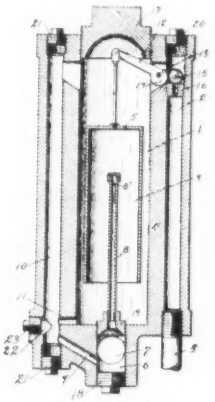


1,006,398

and adjustable attachment to a fixed support common to both ends and located approximately midway of the width of the stirrup, the ends being independently adjustable in the direction of length of the stirrup, whereby the stirrup will form a suspended support.

Heating Department.

1,006,043. Steam-Trap. Otto H. Arner, Three Rivers, Mich., assignor of one-fourth to Adam E. Armstrong and one-fourth to William H. Timm, Three Rivers, Mich. In a steam-trap, the combination with the float chamber having a discharge at its upper end; a discharge valve; a submerged float open at its lower end and having a restricted vent opening at its upper end connected to said valve to open the same on the falling of the float; an inlet chamber; a steam discharge pipe for said inlet chamber projecting into said float; and a water-discharge pas-



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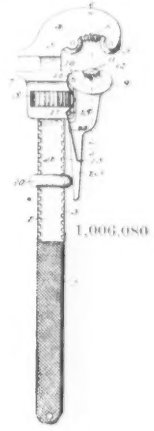

1,006,080.

age for said inlet chamber opening into said inlet chamber below the said steam-discharge pipe and delivering to said float chamber at the upper end thereof, said passage being provided with a by-pass connection with the lower end of said float-chamber.

1,006,080. Pipe-Cutter. Raymond Geoffroy, Arctic, R. I. In a pipe cutter, in combination with a shank formed with a rack, a nut engaging the rack, a sliding jaw on the shank having a nut engaging the rack, a supplemental jaw pivoted to the sliding jaw and formed with a beveled face to engage with said first named nut, a spring carried by the sliding jaw for engagement with the pivoted jaw to hold the latter in contact with the first named nut, and a rigid jaw on the shank.

To the Trade:

We have a well assorted stock of Capitol Sectional Boilers and Capitol Solar Round Boilers at our Detroit (Michigan) Plant; of Furman Sectional and Furman Round Boilers at our Geneva (N. Y.) Plant; and of Sunray Sectional Boilers at our West Newton (Pa.) Plant.

We also have a large stock in both standard and low heights of Triton ornamental radiation at our Dunkirk (N. Y.) Plant and of Grecian plain radiation at our West Newton (Pa.) Plant.

These large stocks permit us to give you very prompt service to any orders calling for the above types and patterns.

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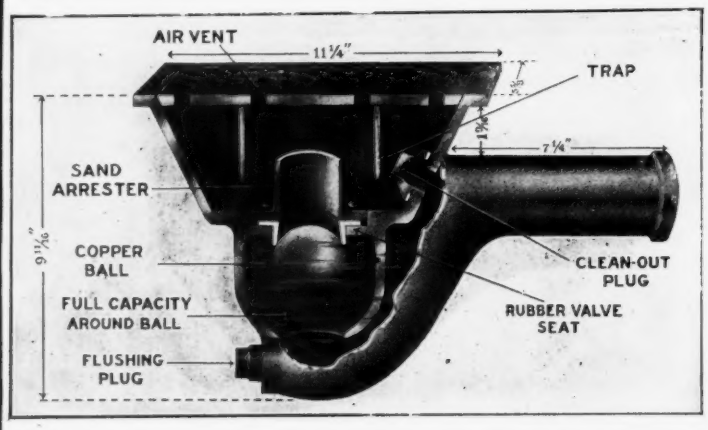
The BLAKE Jr.



No-Back Floor-Drain

Patented July 11, 1911

This cut gives the measurements of our two-inch drain. Other sizes are in same proportion.

2-in. measures 11¼ x 11¼ and 9⅛ in. deep; weight 35 lbs.
3-in measures 12 x 12 and 12⅛ in. deep; weight 45 lbs.
4 in. measures 17 x 17 and 16 in. deep; weight 85 lbs.

Is built along the most advanced lines—sanitary, durable, practical.

You will be convinced by the above illustration that our claim, based on years of experience, is right.

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But—
It is a GOOD one.

Guaranteed for 5 years and that means *Guaranteed to work* not *Guaranteed to Sell.*

Just the same it sells faster than a Cheap Air Valve because it is well worth the difference.

Will you write for our Valve Circular?

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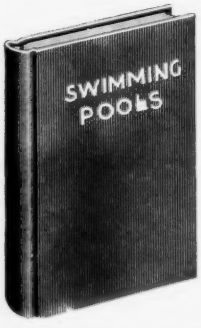

Tomorrow

or the next day some unconsidered point about a swimming pool installation may demand your attention.

Swimming Pools

By Jno. K. Allen

treats of their construction, mechanical installation, water supply and heating, and types of installation for different conditions.

It has 30 illustrations and charts.

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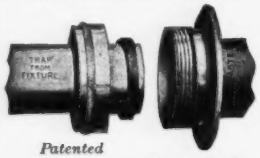
The Stewart Waste Pipe Couplings

for connecting traps or wastes from fixtures to lead waste pipes, without wiped or solder joints. This makes absolutely the best connections.



Patented

Made in the following sizes:

1¼" for 1¼" brass trap or waste connect to 1¼" lead waste.

1⅜" for 1⅜" brass bath overflow connect to 1¼" lead waste.

1½" for 1½" brass trap or waste or bath overflow connect to 1½" lead waste.

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